

JULY 1947

THE INDUSTRY'S RECOGNIZED AUTHORITY

# ROCK PRODUCTS

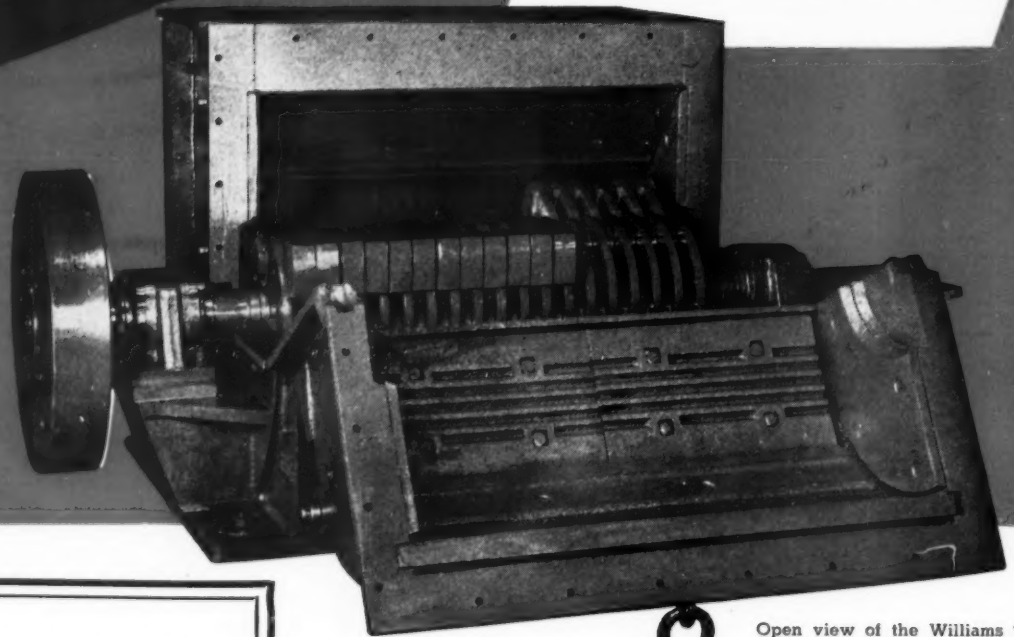
LARGEST NET PAID CIRCULATION IN THE FIELD

Library - Michigan College of  
Mining and Technology  
Houghton, Michigan

Slate quarry of The  
Funkhouser Co., Delta, Penn.

**DESIGNED  
ESPECIALLY FOR  
AGSTONE**

**WILLIAMS  
"NF" HAMMER  
CRUSHER**



Open view of the Williams "NF" Mill showing heavy duty hammers, grinding plates, side liners and cover liners. Also shows easy accessibility to mill for repairs, etc.

## FEATURES OF THE "NF"

- Adjustable grinding plate.
- Hammers adjustable to overcome wear.
- Larger capacities.
- Lifetime construction.
- 2" top liners, 1" side liners.
- Easy to work on—hinged cover.

The Williams "NF" Hammer Crusher was designed especially for reducing 4" or smaller stone to  $\frac{3}{4}$ ",  $\frac{1}{2}$ " or agricultural limestone. Embodies all the outstanding features Williams has developed in hammer mill design and construction and has proved itself an outstanding performer in the field.

The "NF" is built in a large range of sizes with capacities from 9 to 35 tons per hour when making agricultural limestone, affording a size mill for any job. Its principles of operation—a combination of crushing and grinding—enables it to make agstone that meets rigid size specifications at a good margin of profit to producers.

"We appreciate your inquiries—write today for additional information—no obligation on your part."

**WILLIAMS PATENT CRUSHER  
& PULVERIZER COMPANY**

800 ST. LOUIS AVENUE  
ST. LOUIS, MO.



**WILLIAMS**  
OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD  
**WILLIAMS**  
PATENT CRUSHERS GRINDERS SHREDDERS



# "WE HEAR..."

July 1, 1947

Lack of highway design engineers continues to hamper the highway building program. Civil Service rolls in Ohio, for example, are being depleted of designers who seek better pay in private industry.

\*\*\*\*\*

All the agitation to increase the rolls of apprentices in the building trades is bringing favorable results. The U. S. Department of Labor reports that a new all-time record of apprentices employed was set in March. In California, with its unprecedented demand for tile, the tile setter apprentice training program has grown to a capacity enrollment of 32 of whom 90 per cent are veterans.

\*\*\*\*\*

More than 2-1/4 billion dollars collected by the States from motorists has been used for non-road-building purposes and maintenance.

\*\*\*\*\*

In order to attract additional skilled labor to urgently-needed State highway and other projects, New York State officials have agreed to grant special dispensations to contractors permitting employment of workers over 40 hr. weekly. State laws existent prohibit such employment, but enabling legislation was passed permitting exceptions for expediting public works completion.

\*\*\*\*\*

Action is getting underway to build a number of toll turnpike projects. The Pennsylvania Turnpike Commission is surveying a proposed extension of the existing toll road from Harrisburg to Philadelphia, and a system of toll turnpikes is under discussion. Oklahoma has passed a bill authorizing construction of a toll road between Oklahoma City and Tulsa, and Ohio is in process of establishing a turnpike commission.

\*\*\*\*\*

Chemical production in the U. S. is running ahead of war-time peaks, with industries using chemical processes in combination with actual manufacturers of chemicals accounting for more than 20 per cent of the value of all American industrial production.

\*\*\*\*\*

Employers and workers in England have approved a scheme of piece work payment as an aid to higher output. Employers are forbidden by the government to pay production bonuses but the regulation has been widely disregarded and trade unions have intervened to prevent members getting illegal bonuses. In one instance, bricklayers who received an incentive bonus of 90¢ per 100 brick increased their output from 400 to 900 a day, but the union objected.

\*\*\*\*\*

Flash! Local 10 of the A.F.L. Bricklayers, Masons and Plasterers Union, Port Huron, Mich., has rejected a 25¢ hourly wage increase, says Engineering News-Record, because its members evidently favor plenty of work at reasonable compensation to little or none at high wage rates. An already agreed-upon boost was rejected in order to encourage more construction. Who would have "thunk" it?

\*\*\*\*\*

Federal permits are no longer required for construction of houses and now the home-builder can have all the bathrooms he wants. Non-housing construction, however, still requires government authorization.

\*\*\*\*\*

(Continued on page 50)

## WE HEAR

University of Illinois will build the first test house toward the accomplishment of the goal of a national organized movement to build lower cost homes through the complete use of standardized materials. It is claimed that wastage at building sites from trim runs as high as 20 per cent.

\* \* \* \* \*

Employers cannot expect to alter the result of a collective-bargaining election on the claim that unskilled production workers, employed due to inability to secure experienced men, do not constitute a representative unit. Basis for rejection of such an argument by the National Labor Relations Board, it was ruled in a recent decision, was that the substitute workers may be retained indefinitely.

\* \* \* \* \*

An employer cannot grant employees a wage increase differing from wage proposals made by a union bargaining agent, unless bargaining proceedings have broken down, without risk of being charged with refusal to bargain in good faith. That ruling was handed down by the N.L.R.B. in a recent decision.

\* \* \* \* \*

Higher costs of driving have just hit motorists in seven States which have adopted higher gasoline taxes. Ten States have voted against increased levies and 14 others are considering adoption. It is gratifying to learn that the increases of several cents per gal. are to contribute to highway building funds.

\* \* \* \* \*

The total national working force was 58,300,000 people in June, according to the Census Bureau, which includes an increase of about 1,500,000 between the preceding two months, accountable for principally in agriculture. Total unemployment has dropped to near the 2,000,000 level, which certainly does not point to an early recession.

\* \* \* \* \*

According to reports from London, a recruiting drive to get women back into industry almost on a war-time scale is being launched, with the objective of reviving the war-time scheme in which over a million women took part-time jobs.

\* \* \* \* \*

Kansas pedestrians would have been required to wear tail lights if recently proposed legislation had been passed, according to Wall Street Journal. Pending in Pennsylvania is a bill which would require identification numbers on the inside of all hub caps for assistance in the apprehension of thieves. New York killed a measure requiring the installation of polaroid glass in all windshields. It looks as if highway safety is really getting consideration and not only in the planning of grade separations and such.

\* \* \* \* \*

Building material prices are expected to decline 10-15 per cent early in 1948 and prices of homes will finally settle to levels 50 per cent in excess of prewar prices. Authorities believe there never will be a return to prewar price levels.

\* \* \* \* \*

An employer generally cannot be required to re-employ a war veteran if his former job was abolished while he was in the armed services and there is no comparable job available.

\* \* \* \* \*

Signs of the first drop in retail food prices to occur simultaneously with decreases in non-food costs in some five years have appeared, forecasting a downturn in retail prices of non-food commodities. The cost-of-living index dropped 0.3 per cent in April.

\* \* \* \* \*

The Senate public works committee has reported favorably on a bill extending the time for availability of federal aid highway funds to two years instead of the one year provided by the Federal Aid Highway Act of 1944. Early consideration by the Senate is expected.

\* \* \* \* \*

THE EDITORS

## Worker Loyalty and Employers' Rights

**I**F THE LABOR BILL that has been kicking around Congress so long be enacted into law, the unions, which in reality forced federal regulation of labor matters as a wedge for nation-wide enforcement of unionization, will find that they have brought regulation upon themselves. Legalized collective bargaining that grew out of their efforts would subject unions as well as employers, to penalties for unfair labor practices.

Free speech, one of the fundamental rights of our American democracy, has been challenged and made a target for abuse by the Labor Board in its interpretation of phraseology within the Wagner Act that prohibited threats or intimidation by the employer; and, when Supreme Court decisions upheld employers' rights to express themselves on the subject of unionism, ways have been found to link their remarks with other company activities and so arrive at decisions that unions have suffered interference. How far regulation will evolve to encompass both labor and management in laws to eliminate such distortions is problematical.

The N.L.R.B. does not prohibit the right of employers to express their hostility to unions, or their views on labor problems, provided that employees not be threatened or coerced. There is, in fact, no legal denial of free speech as such to employers on union matters but the exercise of absolutely legitimate free speech within the law has boomeranged and been made capital of by unions to the embarrassment of employers.

### Creating Unpleasant Relations

A very recent case comes to mind within the rock products industry where the works manager of a large plant injudiciously addressed a letter to employees just two or three days before an official election ordered by N.L.R.B., belaboring the union in question and urging that the workers vote "no" to its acceptance. He pointed out, in that letter, that repudiation of the union would allow the workers to continue as free individuals, and not subject them to the whims of a very few union officials who would push them around, order them out on strikes, assess fines and other levies, etc. He questioned whether the union would keep to its promises, in appealing for its rejection, while urging a large vote, but promised that there would be no discrimination by the company against workers for union activity or membership.

The freedom of a worker to join or vote for a union was recognized in his letter, which amounted to nothing more than a sales talk, but his mes-

sage apparently was ill-timed and the workers at that plant were not conditioned to accept company appeal. Union acceptance was voted with an overwhelming majority and the union interpreted and publicized the letter widely as it saw fit, with emphasis on the "unfairness" in timing which afforded union officials no opportunity for reply.

While entirely within his legal rights, the manager of the plant, by his action in distributing the letter, certainly did not encourage more amicable employee-employer relations, if he actually did not incite ill-will, and the union, by fanning the blaze, contributed toward a widening breach between the employer and workers who obviously already had little loyalty for their company.

### Regaining Worker Loyalty

Industry by and large has been a victim of opportunism; it allowed itself to lose contact with its workers and now is faced with the necessity to recapture the loyalty of workers, which rightfully should be to the company. After all, welfare of a business enterprise is vital to its employees. Loyalty can be regained by greater recognition of the worker and his problems and, through direct communication with him, by keeping him posted on company policy and future plans that affect him. Then, and only then, can an employer express himself on controversial issues involving labor with the expectation of unprejudiced evaluation.

Collective bargaining is here to stay, whatever the outcome of the pending labor law, and therein lies the golden opportunity to work out agreements that are fair both to labor and industry, and for industry to regain prestige with unions and its own workers, through assertion of its rights. Industry has taken a defensive and defeatist attitude far too often, with the result that it has been saddled with one-sided agreements that could have been avoided through proper understanding and in dealings fair to both sides.

The time is at hand for industry to take the offensive—to have written, unambiguous proposals in collective bargaining negotiations that preserve its rights and recognize its desires but which also protect the interests of its workers and re-instill in them the confidence and loyalty so essential to understanding and harmonious working relations.

*Broer Nordberg*



# STANDARD ENGINEERS NOTEBOOK



## Inhibitor prevents foaming of gear lubricant

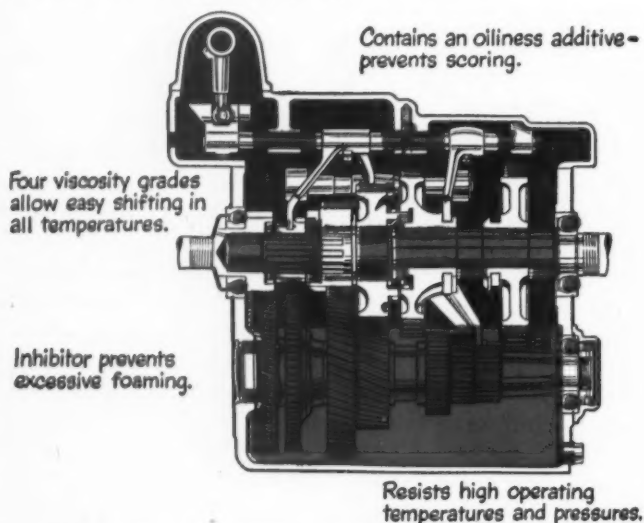
The foaming and expansion of lubricant in transmission and conventional differentials has been eliminated for many operators by the use of RPM Gear Lubricant (Compounded). It contains a highly effective foam inhibitor which prevents retention of air in the lubricant.

Other compounds in RPM Gear Lubricant help it resist high operating temperatures and pressures, dissipate heat rapidly and keep a tough lubricating film on gear teeth at all times.

RPM Gear Lubricant (Compounded) will not form deposits in gear cases and is non-corrosive.

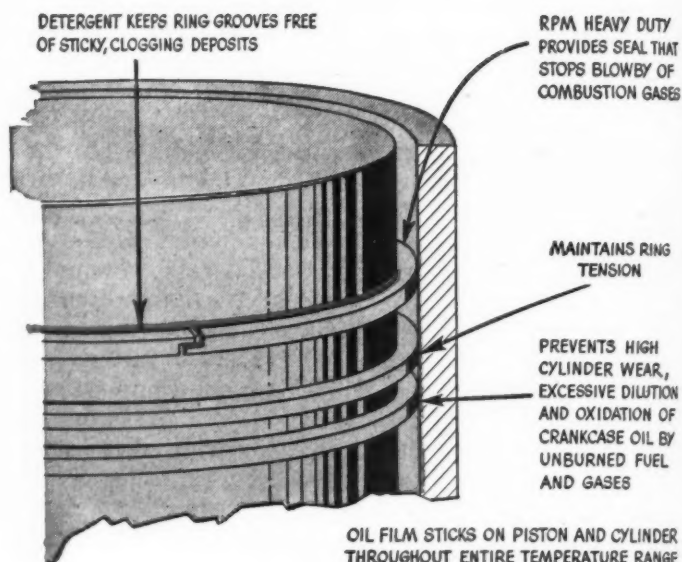
It comes in four grades: SAE 80, 90, 140, 250 and is recommended for all automotive transmissions and all differentials (except hypoids) where compounded gear lubricant is specified. (RPM Multi-Service Gear Lubricant should be used in hypoid differentials.)

RPM Gear Lubricant (Compounded) is recommended for most enclosed gears except hypoids.



This drawing prepared with cooperation of Michigan Power Shovel Co.

For additional information and the name of your nearest Distributor, write Standard of California, 225 Bush Street, San Francisco 20, Calif.; The California Oil Company, 30 Rockefeller Plaza, New York 20, N. Y.; The California Company, 17th and Stout Streets, Denver 1, Colo.; Standard Oil Company of Texas, El Paso, Texas.



## Heavy-duty motor oil reduces cylinder wear

Many operators have eliminated stuck rings, blow-by and excessive cylinder wear by using RPM Heavy Duty Motor Oil.

This special heavy duty oil contains patented additives which remove sticky gum, carbon and lacquer from rings and ring grooves, keeping rings free so they can expand fully. With rings expanded, the tough lubricant film of RPM Heavy Duty Motor Oil forms a seal between rings and cylinder which prevents the force of combustion from driving gases and fuels down the walls.

RPM Heavy Duty Motor Oil sticks to metal at all operating temperatures. This assures unsurpassed lubrication at all times on surfaces of cylinders, pistons and rings, reducing wear to a minimum.

RPM Heavy Duty Motor Oil will resist sludge formation even in coldest operations, will not foam or corrode bearing metals.

Trademarks, "Calol," "RPM," Reg. U. S. Pat. Off.

FOR EVERY NEED A **STANDARD OF CALIFORNIA** JOB-PROVED PRODUCT

# Rocky's NOTES

Nathan C. Rockwood

## Incentive Wage Plans

WE HAVEN'T attempted to read much of the literature on Scientific Management, because it has always seemed to us a sea of words about human relations which are not primarily complicated. True, human relations problems are usually made complicated by devious approach. We believe an open-minded reader would be convinced of this by reading Vol. 1, The Labor and Industrial Relations Yearbook and Directory, 1947, just published; for a copy of which we are indebted to A. F. Davis, vice-president, Lincoln Electric Co. Frankly, our meager preparation for comment is a rather thorough knowledge of some of the difficulties being met in dealing with organized labor as recorded in the transactions of the National Labor Relations Board, the decisions of the courts in labor relations controversies, the awards of arbitrators in disputes over the meaning of union contract clauses, etc. These we have been studying and reporting in ROCK PRODUCTS for almost a year.

Even this book, which is a collection of articles by experts in various fields of economics, seems more concerned with theories as to causes of present difficulties than with specific ways in which they may be overcome. And, naturally enough, there is no general agreement as to specific ways.

### Incentive to Work

It would appear from the statements, the tactics, and the philosophy so far as known of labor union officials, that people work only for money wages. From the practice of that philosophy comes the demand for higher and higher wages in exchange for less and less work, on the theory that the more wages and the less work for union labor, the more owners are deprived of profits on the use of their capital—in other words, that increased wages are paid by reducing profits. Unfortunately for American citizens, our Federal Government has been so stupid as to help promote that fallacy. Nevertheless, the desire to earn more money wages for the things money will buy is a powerful incentive to work, and an entirely legitimate one.

That it can be accomplished, and

everyone, including society as a whole, can profit has been proved not only by our industrial history but by the success of some fairly recent incentive wage systems. This book places particular emphasis on the incentive system in effect at the Lincoln Electric Co., Cleveland, Ohio, and several of the articles are favorable comments on this system, which is explained by J. F. Lincoln, president, and A. F. Davis, vice-president of the company. These Lincoln incentive wage methods have received a great deal of publicity, partly from the attempt of the Federal Government to collect corporation income taxes on wages paid to employees, in amounts so great, that, oddly enough, our pro-labor Government contended ordinary workmen were incapable of earning—an average of over \$5000 per year for every employee.

The explanation is simple. It is contained in these few statistics: Since 1933, production per man has increased 7 times; take-home annual wages increased 4 times; dividends increased 3 times; the number of people employed increased 4 times; prices of the company's products were reduced 60 per cent. All this in a highly competitive industry without benefit of exclusive patents and secret processes. In a nutshell, it was accomplished by whole-hearted, intelligent application by employees to their job of production, with complete faith in the fairness of their employer to compensate them according to individual ability, industry, ingenuity and application. The method is really a piece-work system, not practiced, however, as a speed-up for the exclusive benefit of the employer, but specifically to give the worker all the profit from his production that the overall economy of the enterprise will permit.

### Faith Is Mutual

That the keystone of the whole structure is *faith* in the fairness of the management, it seems to us, is demonstrated by the fact that the actual amount awarded to each employee is left entirely to Mr. Lincoln, who weighs the individual's piece-work earnings as a test of his ability and value as a worker; his length of

service to the company, which is a measure of his store of know-how knowledge; his record of attendance, of accidents, of cooperation and of all-round usefulness. Thus there are no hard and fast rules for bonus sharing; the awards per individual per year, including those in management, have varied between \$10 and \$25,000. In other words, if an employee wants a big year-end bonus, he has to demonstrate that he has earned it.

Management displays equal *faith* in the native genius, the latent ability and skill, the pride of workmanship, in almost every man, if he is given opportunity and encouragement to develop and use these talents. The result of mutual good faith has been not merely speedier and more efficient ways of doing things, through ideas and suggestions from all, but teamwork and great savings in previously wasted tools and materials. The result is not so remarkable to one who has observed soldiering on the job, lackadaisical attitude and irresponsibility displayed today in the average factory and office.

The chief conclusions to be drawn from this experiment in profit sharing seem to be (1) that it is possible only because of the sincerity of purpose on the part of the management, and the conviction of the workers of this sincerity; (2) that it took 20 years to establish this feeling of mutual confidence, under favorable conditions. Hence, no employer can announce establishment of a wage-incentive or profit-sharing scheme and expect his employees to accept it immediately with any great enthusiasm. It is natural that they want to be convinced it is really installed for their benefit as well as the employer's.

It isn't to be wondered that most of the Lincoln employees own their homes, and they also own 30 per cent of the capital stock of the company. They are good, substantial American citizens, and are not likely to have any "fellow-traveler" ideas; for they really know the genuine American way of life. What Mr. Lincoln has accomplished with something more than 3000 employees, he says any employer or management can accomplish with patience and a true sense of justice.

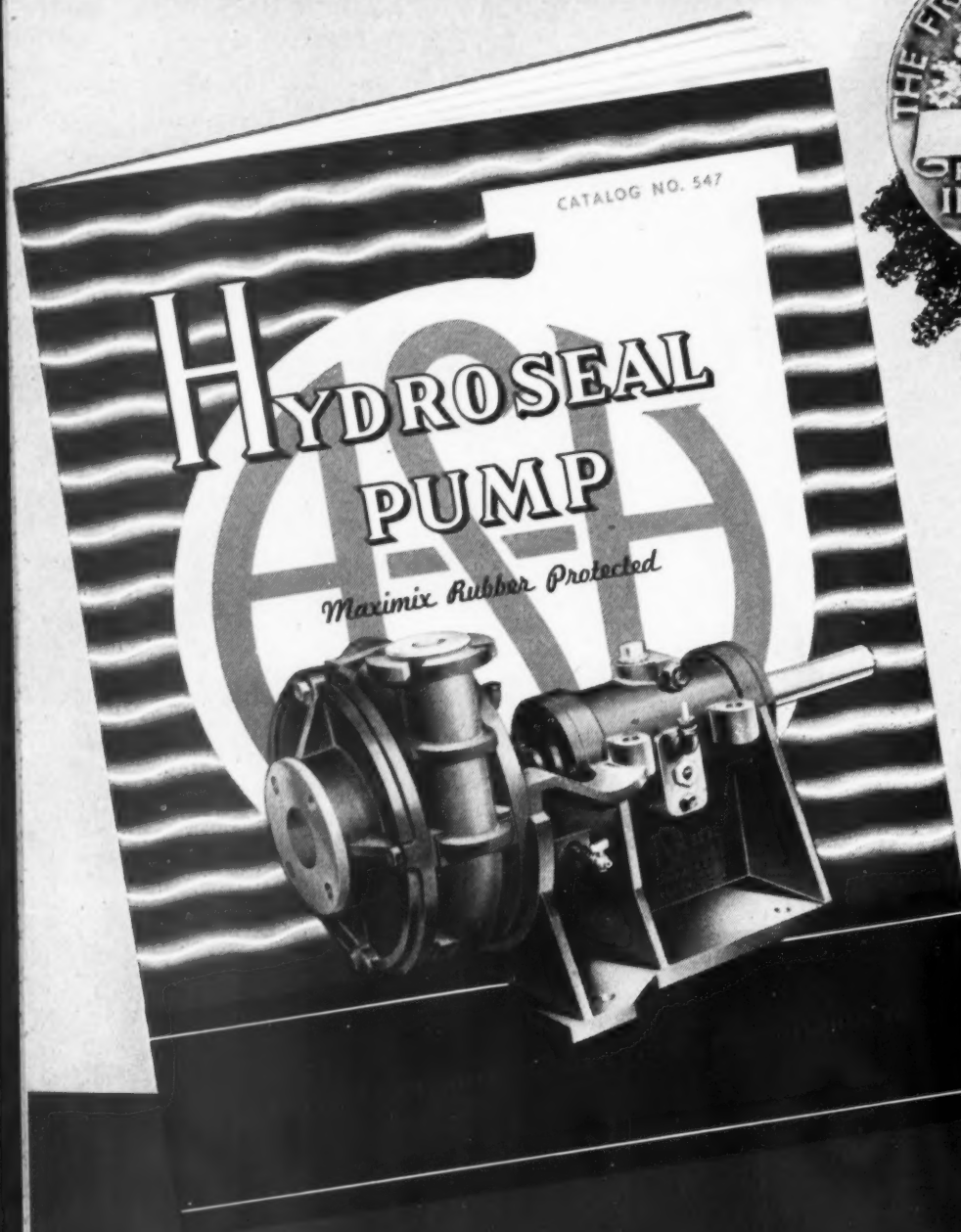
### Banking, Money, Taxes

The rest of the book contains some interesting theories on the causes and cures of industrial instability, which is both cause and result, in part, of labor unrest. For example, Dr. Irving Fisher, economist, would prevent banks from manufacturing money (check deposits) out of nothing. It is fluctuation in the amount of demand deposits in banks, covered by only 20 per cent of actual liquid currency, that helps to cause booms and busts, through price instability. Dr. Fisher would return to the principles upon which commercial banks were founded, and have a 100 per cent reserve for all demand deposits.



# NEW CATALOG

## Post-War Hydroseal Pump



The Franklin Institute was founded in 1824 and is not only the oldest, but the most outstanding institution in the United States for the Advancement of Science and the Promotion of the Mechanic Arts. Annually, since 1890, the Institute has awarded the Edward Longstreth Medal of Merit for Invention. The list of inventors and inventions so honored contains many world-famous names. . . . In April 1944, this award was bestowed for the invention of Hydroseal. The actual citation from the Institute reads as follows: "In consideration of the development of a pump (Hydroseal) which will successfully handle water or liquids containing abrasive materials, retain its initial ef-

fective periods, with low maintenance cost and the successful manufacture of this type of pump (Hydroseal) giving satisfactory operation in installations". . . . Naturally, we are proud of our achievement and recognition it has been given. No other materials handling pump has been recognized.

Seven pages, crammed full of technical description and engineering data about all three types of Hydroseal Pumps:

- Sand Pump (Materials, 100% minus ¼")
- Slurry Pump (Materials, 100% minus 48 mesh)
- Dredge Pump (Large and heavy materials, up to 6")

Performance tables of all eight standard sizes, with a capacity range from 10 G.P.M. to 12,000 G.P.M. Also, other useful tables and formulae for selecting the correct Hydroseal for any pumping job, and a useful "How much money will it save me?" graph. Entirely new, up-to-date information. Write for it today.

HYDROSEAL, PACKLESS AND MAXIMIX DESIGNS ARE COVERED BY PATENTS AND APPLICATIONS IN THE MAJOR MINING CENTERS OF THE WORLD.

Correspondence from United States and Canada to  
**ALLEN-SHERMAN-HOFF CO., 1435 Locust St., Phila. 2, Pa.**

Correspondence from anywhere else in the World to  
**A-S-H EXPORT CO., 1435 Locust St., Phila. 2, Pa.**

CABLE ADDRESS: ASH, PHILADELPHIA—BENTLEY'S CODE



# the *Personal Side* of the news

## Standard Gypsum Officials

CLAUDE E. HARPER, formerly Hawaiian division manager for Permanente Cement Co., Oakland Calif., has been appointed assistant general man-



Claude Harper

ager of the Standard Gypsum Company of California, organized in 1944 by Henry J. Kaiser and Samuel A. Perkins, president of the Standard Gypsum Co., Inc., which has been taken over completely by the new company. GIL F. RICHARDS has been placed in charge of sales; JERRY DONOGHUE has been made Southern California division sales manager; and DICK JAMES has been appointed Northern California division sales representative.

## Manages Equipment Co.

C. N. BECKER, who was assistant manager of the Southern Phosphate Corp., Bartow, Fla., is now manager of R. H. Clark Equipment Co., Mulberry, Fla.

## President Resigns

L. T. SUNDERLAND has resigned as president of the Ash Grove Lime and Portland Cement Co., Kansas City, Mo. His son, Allan, will succeed him as president of the company.

## New Officers

R. G. L. HARSTONE has been reelected president of the Queenston Quarries, Ltd., also vice-president and managing director of Canada Crushed Stone, Ltd., both of Hamilton, Ontario, Canada. D. E. Steele is secretary of the Queenston company, of

which A. Michie is vice-president and general manager, and C. H. Doolittle, treasurer. Mr. Steele is also secretary-treasurer of Canada Crushed Stone, Ltd., of which Alan V. Young is president.

## Universal Appointments

FRANCIS A. HENNIGAN, industrial engineer, Universal Atlas Cement Co., New York, N. Y., has been appointed assistant to L. M. Funderburg, vice-president. MORRIE W. WINSCH has retired as manager of the Northampton, Penn., plant, and is succeeded by L. J. BOUCHER, former assistant plant manager. RAYMOND W. SMITH, assistant general operating foreman at Northampton becomes the assistant plant manager, succeeding Mr. Boucher. ALFRED H. ZIMMERMAN, practice engineer, has been appointed assistant manager of the plant at Independence, Kansas.

Mr. Hennigan joined the company in 1936, when he was engaged to work with a committee on manufacturing costs and other studies at the Buffington, Ind., plant. Shortly thereafter, he was appointed chief industrial engineer, and was transferred to New York, in the same capacity, in 1939. Early in 1942, Mr. Hennigan entered military service as 1st Lieutenant in the Ordnance Department, U. S. Army. He was honorably discharged as Major in 1945, when he rejoined the company as industrial engineer.

Mr. Winsch closes a career of forty-three years in the cement industry which began in 1904 as draftsman at the Northampton plant and advanced successively to shop inspector, assistant master mechanic and maintenance superintendent. He was appointed assistant plant manager in



L. J. Boucher



F. A. Hennigan

1924 and became plant manager in 1927.

Mr. Boucher, successor to Mr. Winsch, joined the company in 1915 as engineer at the Hannibal, Mo., plant. Subsequently he was made assistant mine quarry superintendent and mine quarry superintendent. In 1927, he was transferred to the Northampton plant as assistant plant manager.

Mr. Smith, who succeeds Mr. Boucher, was first employed by the company in 1921 as mill clerk at Northampton plant. By 1926 he was mill foreman, then turn foreman, and in 1945 was appointed assistant general operating foreman.

Mr. Zimmerman, new assistant plant manager at Independence, Kansas, plant, joined the company in 1936 as field engineer at the Waco, Texas, plant. He became assistant engineer in the operating department at the Chicago and New York offices. In 1941, he was transferred to the engineering department in New York. He saw four years of military service with the Corps of Engineers, U. S. Army, being honorably discharged as Captain in January, 1946, when he rejoined the company as field engineer in the operating department, New York. In August of the same year, he was appointed practice engineer at the Independence plant.

## Talc Producers Meeting

HENRY MULRYAN, executive vice-president, Sierra Talc Co., Los Angeles, Calif., was in New York recently for a special meeting of talc producers. Mr. Mulryan is a director of the Los Angeles Chamber of Commerce. He is chairman of the Western Committee of the Industrial Minerals Division, A.I.M.E.

## Director of Sales

C. E. LOVEWELL, chief engineer for The Carney Co., Inc., Mankato, Minn., has been named director of sales for the cement division, and C. H. CARLSON has been promoted to manager of



C. E. Lovewell

sales for the insulation division. Both will continue under general supervision of N. A. Holmer, vice-president in charge of sales, Minneapolis, Minn. Mr. Lovewell has been associated with the company since June, 1945. Previous to that he had served as sales engineer and then service engineer for the Louisville Cement Co., Louisville, Ky. Mr. Carlson joined the company in 1944 and previously was associated with United States Gypsum Co. as a salesman, with headquarters in Minneapolis and at Sioux Falls, S. D.

## Reelect Directors and Officers

GEORGE G. TREAT has been reelected president of the Bessemer Limestone and Cement Co., Youngstown, Ohio. F. B. Warren was reelected vice-president in charge of sales; R. E. Roscoe, vice-president in charge of operations; J. Q. Adams, secretary and treasurer; and H. G. Hinson, assistant secretary and assistant treasurer. All directors were also reelected.

## Sales Managers

DAVID S. DAY, sales manager at the Minneapolis office of the Universal Atlas Cement Co., New York, N. Y., has been appointed sales manager at Duluth. P. L. BOWLIN, formerly district sales manager at Des Moines, Iowa, will succeed Mr. Day as sales manager at Minneapolis, and PATRICK F. MORRISSEY, Kansas City representative since February, 1946, succeeds Mr. Bowlin as district sales manager at Des Moines. Mr. Day joined the

company at Chicago in 1907 and was transferred to Minneapolis in 1913. Five years later he was advanced to assistant sales manager and, since 1935, has been sales manager. Mr. Bowlin became associated with Universal in 1928 as a salesman in Iowa. In 1945 he was appointed district sales manager at Des Moines. Mr. Morrissey was employed by the company in 1939 as Atlas White cement representative in Kansas City. After two years of active service with the Navy in the Pacific area, he returned to the company in the same capacity.

## Receives Safety Award

A. J. R. CURTIS, safety director of the Portland Cement Association, Chicago, Ill., has been voted a special award by the Joseph A. Holmes, Foundation for his leadership in maintaining an outstanding safety record during the past two decades in member plants of the organization. Mr. Curtis has been in charge of the Association's safety activities since 1927, and has been responsible for numerous innovations promoting safety in member plants embracing mills and quarries in 33 states and five Canadian provinces which employ an average of between 25,000 and 35,000 men. He is a member and past president of the American Society of Agricultural Engineers, secretary of the National Conference on Concrete House Construction, past secretary of the Cement and Quarry Section of the National Safety Council and a present member of the Council's executive board, a member of the American Society of Safety Engineers, and a member of the Board of Trustees, Illinois Institute of Technology.

## Assists President

OSCAR E. BENSON has been appointed assistant to Otho M. Graves, president of The General Crushed Stone



Oscar E. Benson

Co., Easton, Penn. Mr. Benson is both a civil and electrical engineer and has had a wide experience in construction work and as an executive. He was operating superintendent of the New York State Gas and Electric Corp., Ithaca, N. Y., for many years, and at present is vice-president of the Metropolitan Edison Co. and in charge of the York, Penn., division of that company.

## Lone Star Promotions

J. H. LEIKHIM has been appointed vice-president and treasurer of the Lone Star Cement Corp., New York, N. Y., succeeding A. V. Lemasters, who has retired. HARRY E. GREEN will assume Mr. Leikhim's position as assistant treasurer of the Indiana Division, with J. G. WEST as sales manager, Indianapolis, Ind. This is part of a general announcement of changes in personnel, notice of the appointment of Thorkild Avnsoe as executive vice-president appearing in the June issue of ROCK PRODUCTS. Other appointments include CLAIBORNE C. VAN ZANDT who has been named chief engineer; I. C. BROTZMAN, domestic operations manager; N. M. DEBRUIN, foreign operations manager; and FRED C. SCHIEBER, general superintendent of the Eastern division.

## Ideal Appointments

CARROLL NORDEAN, chief clerk at the Mobile, Ala., plant of the Ideal Cement Co., Denver, Colo., has been promoted to manager of the surplus property division. DEWITT B. BOON will succeed Mr. Nordean as chief clerk at the Mobile plant, and J. E. MOULTRIE, JR., has been made plant engineer. Mr. Boone has served as assistant chief clerk since June, 1946, when he became associated with the company, after having had nine years' experience with the T.V.A. in the construction and maintenance department as property and supply officer. Mr. Moultrie, Jr., was formerly draftsman at the Mobile plant. Previous to joining the company he was material planner and assistant test engineer for the Gulf Shipbuilding Co., and prior to that was superintendent on building and maintenance work for the Alabama State Highway Department.

## Association Officers

A. B. STALL has been elected treasurer of the Portland Cement Association, Chicago, Ill., succeeding Frank L. Page, who retired April 30. EDWARD F. MACARTHUR will succeed Mr. Stall as assistant treasurer. Mr. Stall has been a member of the Association staff for 31 years, during which he held the positions of assistant auditor, auditor and assistant treasurer. Mr. MacArthur joined the Association in 1941 from the accounting firm of Price, Waterhouse & Co. From 1943 until early in 1946 he served with the armed forces of the United States,



ending his service as an auditor in the Signal Corps where he handled accounting details relating to contract terminations. Mr. Page has served the Association since 1916. He is now living in Boulder, Colo.

### A.I.M.E. Nominees

RICHARD W. SMITH, vice-chairman of the Papers and Programs Committee, has been nominated as chairman of the Industrial Minerals Division of the A.I.M.E. for the year 1948. RICHARD M. FOOSE has been named by the Nominating Committee as Eastern vice-chairman; J. G. ROSS, Northeastern and Canadian vice-chairman; J. E. LAMAR, Midwest and Rocky Mountain vice-chairman; A. F. GREAVES-WALKER, Southeastern vice-chairman; HENRY MULRYAN, Western vice-chairman; and G. RICHARDS GWINN, secretary-treasurer. H. M. Bannerman, J. A. Barr, Sr., and C. H. Behre, Jr., were nominated to serve three years on the executive committee.

### Ruhm Phosphate Officers

H. E. HOOVER has been elected chairman of the board of directors of the Ruhm Phosphate and Chemical Co., Mt. Pleasant, Tenn. O. M. Babcock, Jr., has been named president; H. S. Demaree and H. D. Ruhm, vice-presidents; G. H. Rosberg, Chicago, secretary; R. S. Morrison, Mt. Pleasant, assistant secretary; W. F. Hudson, Mt. Pleasant, treasurer; and Ruby Swen, Chicago, assistant treasurer.

### Promoted

J. S. SMALLING has been promoted to assistant sales manager of the Gager Lime Co., Chattanooga, Tenn. He has been a salesman with the company for about 12 years with the exception of two and one-half years' service with the Army. J. B. LESLIE of Birmingham, Ala., who is an old-timer in the lime business, has joined the sales force.

### Assists F.H.A. Commissioner

WALTER L. GREENE of Washington, D. C., has been appointed assistant to Commissioner Raymond M. Foley of the Federal Housing Administration, Washington, D. C. He succeeds William D. Flanders who resigned to return to private business.

### Joins Concrete Firm

A. C. STOTLER has resigned as assistant to the business manager in charge of student housing at the University of Missouri, to become manager of the Columbia Asphaltic Concrete Co., Columbia, Mo.

### Lone Star Appointment

RAY L. ATKISSON, salesman in the Chillicothe, Mo., office of the Lone Star Cement Corp., New York, N. Y., has been named assistant sales man-

ager of the Kansas division, which comprises Oklahoma, Arkansas, Missouri, Kansas, Iowa, and Nebraska. Mr. Atkisson, who has been with the organization for 21 years, will make his headquarters in Kansas City, Mo.

### Sales Director

DEVEREUX BACON, JR., has been appointed sales director for the Florida Division of the General Portland Cement Co., Tampa, Fla., and BEN G. WALLIS has been named assistant sales director.

### Resigns

M. W. LOVING has resigned as consulting engineer for the American Concrete Pipe Association, Chicago, Ill., in order to devote more time as consultant to individual manufacturers.

## OBITUARIES

JOHN C. SCHAFER, one of the earliest and most progressive engineers and inventors in the modern lime industry, died May 1 at his home in New Augusta, Miss., at the age of 69. During the 1920's, Mr. Schaffer in partnership with the late Waller Crow, made the designs and engineered construction work of some of the most important existing plants in the Ohio finishing lime industry. He also designed and supervised construction of the Knickerbocker Lime Co., and the American Lime and Stone Co. plants in Pennsylvania, both now part of the Warner Co.'s operations. As an inventor he obtained several patents on lime manufacture and processing machinery, including the well-known Schaffer poidometer and Schaffer hydrator. He was about the first engineer in the American lime industry to succeed in selling this ancient craft on new and revolutionary ideas and processing. Not all of his ideas proved to be sound in practice, but during the days of his active participation in lime manufacture, all admired his progressiveness, and few men have left a more permanent impression in any industry. For the past several years he had lived in New Augusta, Miss., and devoted his inventive talents to the extraction of turpentine from old pine stumps. A son, F. W. Schaffer, of the United States Gypsum Co., Philadelphia, Penn., survives.

MARTIN SWINTEK, inventor and designer of the "Swintek" dredging ladder manufactured by the Eagle Iron Works, Des Moines, Iowa, died May 2 at his home in Eddyville, Iowa. He was 74 years old. As superintendent of an Iowa sand and gravel plant for many years, Mr. Swintek met numerous vexing problems of suction pipe and nozzle choking in pumping sand and gravel from river bed and pit deposits. His solution to the various

obstacles, difficulties and unusual situations was the development of the traveling chain type digging ladder.

C. F. HARRIS, general manager of the Columbus Gravel Co., Columbus, Miss., until his retirement in 1943, passed away May 31 at the age of 68. Born in Jackson, Tenn., Mr. Harris began his career as a locomotive fireman on the Illinois Central Railroad, was later supervisor of the county road system and then went into the contracting business with Smith Bros., Inc., Dallas, Texas. During his association with the Columbus Gravel Co., he was a member of the board of directors of the Mississippi Sand and Gravel Association. He designed several dredges and screening plants and was active in business and civic interests in Columbus and North Mississippi.

PHILIP TENNANT, for many years identified with the national sales organization of the Texas Co., New York, N. Y., passed away June 6 at his home near Nazareth, Penn., after a long illness. He had retired from the Texas Company about a year ago. Mr. Tennant had long been identified with the rock products industry, first through his early experience in the grinding of silica and later, in his many years with the Texaco Company which kept him in constant contact with the rock products industry. Phil was a familiar figure at the national conventions of the aggregates industries and was a past director of the Manufacturers' Division of the National Crushed Stone Association.

JOHN H. BLACK, president and founder of the John H. Black Co., Buffalo, N. Y., a concrete brick and products firm, died recently at his home in Pasadena, Calif., where he had lived for the last 15 years. He was 79 years old. Mr. Black founded the firm in 1896 and had been its president up to the time of his death.

EDWARD FRANCIS FITCH, who had been president of the Florida Crushed Stone Co., Jacksonville, Fla., until two years ago, when he retired on account of his health, died May 17 at the age of 70. He was a native of Chicago but had lived in Jacksonville the last 26 years.

THOMAS H. SLATER, western New York sales representative for the Pennsylvania-Dixie Cement Co., New York, N. Y., for 15 years, died recently at his home in Buffalo, N. Y., after a brief illness. He was 55 years of age and a veteran of World War I.

FRED W. CARSTANS, director of purchases for the Medusa Portland Cement Co., Cleveland, Ohio, passed away June 3 at his home in Cleveland. He was 57 years of age.

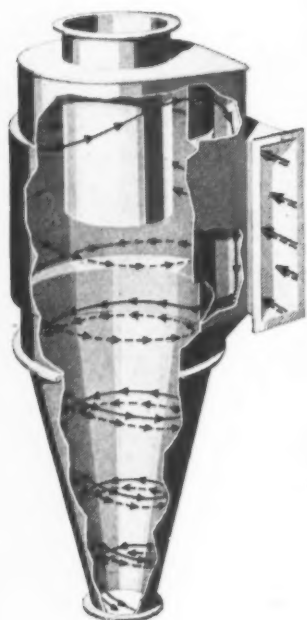
GEORGE S. HAYDE, secretary-treasurer of the American Aggregate Co., Kansas City, Mo., died May 16 after a long illness. He was 59 years old.



IN DUST RECOVERY...

Performance "paved  
with good intentions"  
*isn't enough!*

**B**uell is the champion of Fractional Efficiency Performance Guarantees as the only way to assure the user's after satisfaction.



Dust, inevitably, is a mixture of coarse particles, fine, still finer, and so on down to low-micron sizes. Almost as inevitably, there will be a critically important fraction of certain fines. You HAVE to know that they will be effectively trapped in your dust control apparatus.

Buell tells you in detail! And nothing less than complete Fractional Efficiency Curves present a true picture.

Buell performance is in a class apart because of its design. The patented van Tongeren harnessing of the otherwise mischievous "double eddy" current is at the heart of the matter. The Shave-off is the pay-off!

What it is and why it makes so vital a difference is the subject of an interesting exposition in "The van Tongeren System of Industrial Dust Recovery". Free for the asking. Write: Buell Engineering Company, 2 Cedar Street, Suite 5000, New York 5, N. Y.

**buell**  
Engineered Efficiency in **DUST RECOVERY**



# Association NEWS

**W**ITH labor legislation, the tax bill, and appropriations out of the way in Washington, business can settle down to a more definite program. Although President Truman's veto of the tax bill will have the effect of cutting off additional purchasing power represented by lower individual and corporate taxes anticipated by the passage of this bill into law, it is expected that a substantial payment on the national debt will be made.

### Cut AAA Program

No one anticipated that the House Committee on Appropriations would take such a drastic cut in the funds allotted for the Agricultural Conservation Program. As recommended by the Committee, the total funds for 1947 would total \$165,000,000, a reduction of \$135,000,000, or 45 per cent under 1946. Of this amount, \$150,000,000 is to be used to pay farmers for practices carried out under the 1947 program. The \$15,000,000 is for salaries and other administrative expenses. Planning of a program for 1948 is specifically prohibited. As pointed out by Henry A. Huschke, managing director of the Agricultural Limestone Division, National Crushed Stone Association, the bill still has to pass the hurdle of further debate in the House, then passed to the Senate for hearings before the Senate Subcommittee on Agricultural Appropriations and debate, a conference committee between House and Senate, and then final approval by the President with his signature.

It is hoped that this appropriation bill, designated H.R. 3601, will be amended to provide sufficient funds to carry on an adequate program in 1947 and set forth plans for its continuance in 1948.

### Sand and Gravel Regional Meetings

It has been announced by Executive Secretary V. P. Ahearn that during the year a number of regional meetings will be held at which questions of current concern to the industry will be discussed. The following meetings have been scheduled for July: Columbus, Ohio, Deshler-Wallick Hotel, July 9; Chicago, Ill., Palmer House, July 10; Denver, Colo., Brown Palace, July 11; San Francisco, Calif., St. Francis Hotel, July 14. Meetings were held in Memphis, Tenn., on June 23 and at Dallas, Texas, on June 24. Announcements

of other meetings for eastern and New England members will be made later. The meeting scheduled for Columbus, Ohio, will be held in conjunction with the Ohio Sand and Gravel Association and the Ohio Ready Mixed Concrete Association; the Illinois Sand and Gravel Association is co-sponsor for the Chicago meeting; and the Rock, Sand and Gravel Producers Association of Northern California is co-sponsor for the San Francisco meeting.

### Missouri Agstone Haulers Exempt

Missouri agricultural limestone haulers are exempted from the jurisdiction of the Public Service Commission by legislation recently passed. According to a bulletin of the Missouri Limestone Producers Association, the passage of this law relieves limestone haulers of obtaining Public Service Commission permits, but it does not lessen insurance, liability and safety requirements for these trucks. Another bill before the Missouri House would require all loaded agricultural limestone trucks to be enclosed with a canvas, wood or metal cover.

### Housing Permits

Housing Expediter Frank R. Creedon recently announced that, beginning June 1, federal housing permits will no longer be required of those who want to build homes for themselves or for veterans, the limit on the number of bathroom fixtures to be installed in a new house will be removed, and the 1500 sq. ft. limitation on homes will be expanded to 2000 sq. ft. Contractors who have already obtained permits may adopt these more liberal provisions. According to recent reports, the House appropriations Committee has cut off funds providing for the Housing Expediter, but it is expected that the Senate may restore some of these cuts.

### Apprentice Training Program

Executive Secretary E. W. Dienhart of the National Concrete Masonry Association, in Bulletin 121, called attention to a letter recently sent out by Harry C. Bates, president of the bricklayers International Union, requesting close co-operation of the local unions with the 250 joint apprenticeship committees in training apprentices. These committees have been set up in accordance with agreements between the Bricklayers, Ma-

sons and Plasterers' International Union of America and the Associated General Contractors of America, Inc., in cooperation with the Apprentice-Training Service, U. S. Department of Labor.

### Industrial Minerals Division, A.I.M.E.

At the last Executive Committee meeting of the American Institute of Mining and Metallurgical Engineers, Industrial Minerals Division meeting in New York City it was announced that the West Coast representatives were considering two meetings for 1947; one in San Francisco to be held jointly with a Chemical Society convention; and the other to be held in Los Angeles jointly with the Petroleum Division of the Institute. The Executive Committee voted to hold a sectional meeting in the Southeastern States and in Colorado.

### Missouri Producers Organize

Producers of agricultural limestone in Missouri recently organized the Missouri Limestone Producers Association. The new association has 30 active members. Officers and directors include the following: L. W. Hayes, Kansas City, president; Ben Donnell, St. Louis, vice-president; and Arthur Alvis, Butler, treasurer. Paul N. Doll of Jefferson City, Mo., is manager. Directors comprise the officers and the following: J. J. Griesemer, Billings; Chas. E. Thomson, Kansas City; Oliver Taetz, Gray Summit; Merl Ham-mill, Canton; Ray Howerton, Ashley; and L. H. Bray, Rolla.

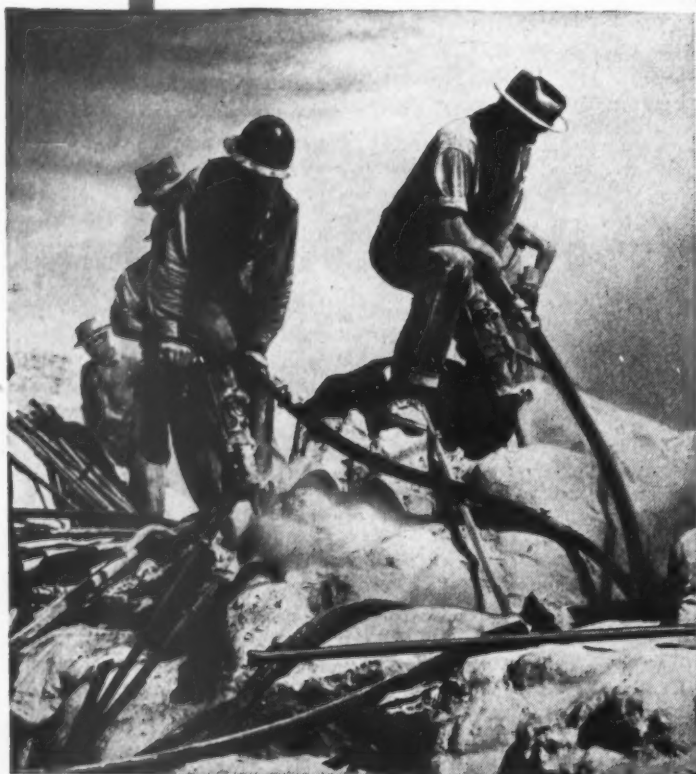
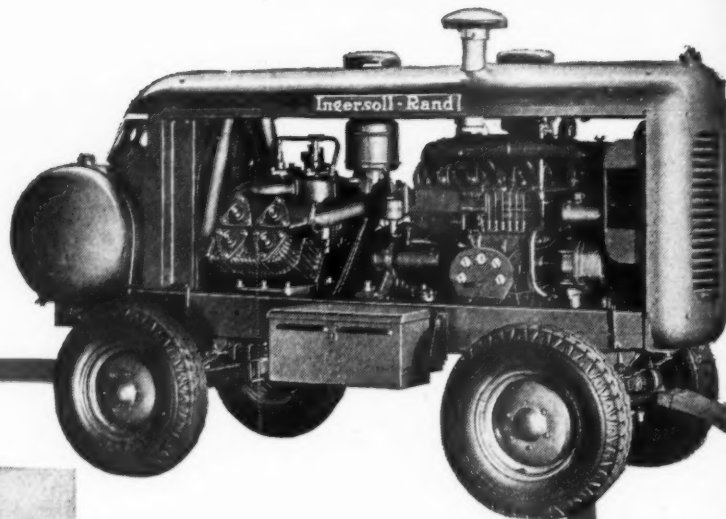
### Study of Wage Practices

Executive Secretary V. P. Ahearn has sent out a questionnaire at the suggestion of the Board of Directors for a Study of Wage Practices. He has requested prompt attention in filling out the questionnaire. Compilation of this information should be an invaluable aid to companies faced with labor negotiations.

### Agricultural Limestone Analyses

HENRY A. HUSCHKE, managing director, Agricultural Limestone Division, National Crushed Stone Association, has sent out a questionnaire to the membership requesting information concerning chemical and physical characteristics of agricultural limestone produced at each plant.

# KEEP VALVES CLEAN...



# GET MORE AIR

**PROTECT YOUR DRILLS.** Effective lubrication does it! Texaco Rock Drill Lubricants (E.P.) prevent rust in service and in storage, resist washout, protect all moving parts against wear even in the heaviest service. They conform to lubrication specifications of leading rock drill manufacturers.

*What's the best way to keep compressor valves clean?*  
Effective lubrication—Texaco Alcaid, Algol or Ursa Oil.

*Why those particular oils?*

Because Texaco Alcaid, Algol and Ursa Oils are especially refined to free them of impurities that form hard carbon deposits. Any slight amount of carbon that may form in use is soft and fluffy—won't impede valve action.

*That all?*

No. These oils keep rings free, too—and ports and air lines clear. Your compressors run more efficiently, give full air pressure at your drills. Thus

you have less maintenance expense—fewer repairs and overhauls.

*All right, which of the three do I use—Alcaid, Algol or Ursa Oil?*

They're all in the same series, developed for effective compressor lubrication. Use the one recommended by Texaco Lubrication Engineering Service for your particular operating conditions.

*Where can I get Texaco service and products?*

Just call the nearest of the more than 2500 Texaco distributing plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



## TEXACO Lubricants and Fuels

Tune in... TEXACO STAR THEATRE presents the NEW TONY MARTIN SHOW every Sunday night. See newspaper for time and station.





# INDUSTRY

# News

## Permanente to Operate Seattle Cement Plant

PERMANENTE CEMENT CO., Oakland, Calif., will operate the Diamond plant of Pacific Coast Cement Co., Seattle, Wash., which was recently leased to General Construction Co. The lease has been assigned to Permanente for operation through February, 1948, and it is being assumed that this interim arrangement will be extended later. Reports state that the Seattle plant will be supplied with View Cove, Alaska, limestone delivered to the plant by a Permanente chartered vessel, the S.S. Diamond. The new plant will be known as the Diamond division, Permanente Cement Co. Production will be about 1,000,000 bbls. Permanente portland cement, Pronto cement, and brick mix cement will be manufactured.

## Big Limestone Blast

ACME LIMESTONE CO., Fort Spring, W. Va., recently staged what is believed to be one of the largest blasts in the eastern states when 600,000 tons of rock were brought down. A du Pont explosives expert supervised the detonation of 200,000 lbs. of dynamite. About half of the limestone will be used in the construction of the Bluestone dam. Another blast of similar size will be made at the same quarry in October.

## WAA Silica Plant Bids

WAR ASSETS ADMINISTRATION at Portland, Ore., recently opened three bids for acquisition of a wartime built silica sand plant near Eugene, Ore. Two of the bids offered outright

purchase of the property, and the other sought a five-year lease. Prospective purchasers were the R. A. Babb Hardware Co., Eugene, Ore., and Peters Lumber Co.

## Mexico's New Cement Plant

CEMENTO PORTLAND NACIONAL, S. A., Hermosillo, Sonora, Mexico, will soon start operations at its new cement plant. It will have a production of 530 tons of cement daily, manufacturing four types. The cost of the plant is 12,000,000 pesos, and it will generate its own electricity with a capacity of 3500 hp. Ignacio Soto, prominent Sonora industrialist, is president of the company, and Alfonso Almada is plant manager.

## Big Ready Mix Plant

JOHN A. DENIE'S SONS CO., Memphis, Tenn., will place in operation one of the South's largest ready mixed concrete plants this Summer. This \$100,000 plant will mix 4½-cu. yd. loads. It is reported that 100 transit mix trucks will be added to the present fleet: This company has several big ready mixed concrete contracts, including one to furnish about 35,000 cu. yds. for a tuberculosis hospital.

## Constructing Arizona Cement Plant

ARIZONA PORTLAND CEMENT CO., will have its new cement plant in operation by January 1, 1948, according to a recent announcement. The plant, located at Rillito, Ariz., will have a 9½ x 250 ft. kiln, producing 1800 bbls. of cement daily.

## Stone Plant Installing Dust Collector

OHIO MARBLE CO., Piqua, Ohio, placed in service an addition to its plant which taxed the capacity of its present dust collector equipment, necessitating additional collecting capacity. As a temporary measure until equipment could be installed, the company has taken the exhaust from the new milling plant into a silo which it is expected will precipitate a large part of the dust now escaping into the atmosphere and causing complaints.

## Plan Turnpike Extension

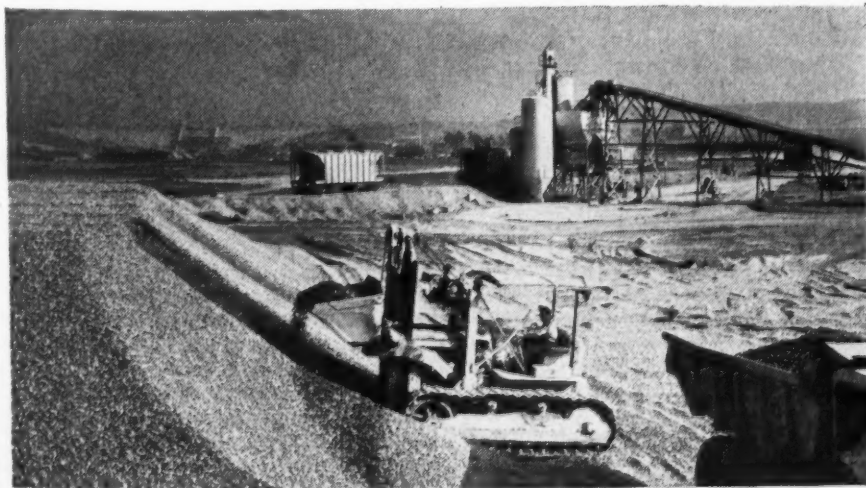
A BILL is now before the Pennsylvania legislature which provides for the establishment of an interstate turnpike commission to be composed of separate commissions in Pennsylvania, Ohio, West Virginia, and Indiana to facilitate extension of the Pennsylvania Turnpike to the Indiana border. The Commission would have authority to construct the proposed four-state extension and finance it by issuing bonds to be retired from toll revenue. This development came a few weeks after the State Turnpike Commission authorized a survey to determine the best route for extending the superhighway to Philadelphia.

## Zone Suit Started Against Gravel Producer

JOHN D. GREGG, well-known producer of sand and gravel in the Los Angeles, Calif., area, is fighting a suit started by Roscoe, Calif., residents alleging that the proposed extension of gravel excavation operations is on land zoned for residential and agricultural purposes. The city planning commission had held that the area was zoned for residential and agricultural purposes, but the city council had over-ruled the commission and granted a permit. The Los Angeles Superior Court is now hearing the case. A preview of the case was presented before the recently held convention of the National Sand and Gravel Association in Los Angeles, but as a pending legal action was imminent it was considered advisable to withhold publication until the case reached the courts.

## Protest Quarry Operation

J. & L. SNOUFFER, INC., has been confronted with an injunction by Dublin, Ohio, residents seeking to halt work on the opening of a quarry, claiming damage from blasting.



Concrete batching plant operated by Peter Kiewit Sons' Co. to supply concrete for lining Friant-Kern canal. The dam can be seen in the background. A Traxcavator-equipped Caterpillar tractor loads trucks hauling aggregates to plant conveyor. Bulk cement cars are shown to the left

## Marquette Adds to Marine Fleet

MARQUETTE CEMENT MANUFACTURING Co., Chicago, Ill., has taken steps to alleviate the freight car shortage and meet current heavy demands for its products by the addition of a new 45-ft. harbor boat "Little Dick" to its Water Transportation Division. It was placed in operation at the R. Moyle Dock at Oglesby, Ill., and a new towboat also will be commissioned before the end of the summer to augment barging operations on the Illinois and Mississippi rivers. The new harbor boat is an all-welded steel motor vessel with a 12-ft. beam and a 3-ft. draft, and is powered by a D-13000 Caterpillar marine type Diesel engine delivering 115 hp. at 900 r.p.m.

## Open New Quarry; Suggest Cement Manufacture

L. W. HAYES, INC., recently opened up a new quarry northeast of Bethany, Mo., in a large deposit which is said to be particularly desirable for cement manufacture. Adjacent to the high-calcium content Bethany Falls limestone is the Winterset limestone and a clay and shale deposit, providing a combination of materials suitable for cement manufacture. It is reported that a representative of the Burlington railroad has become interested in its possibilities.

## Big Silo Stave Plant Going Into Production

MARIETTA CONCRETE CORPORATION, Marietta, Ohio, will soon start operations at its \$250,000 concrete silo stave and block plant at Rossville, Md. The company manufactures a complete line of farm silos and industrial storage bins and also concrete block. The company also has been in the general contracting business since 1930.

## Cement Safety Meeting

COLUMBIA CEMENT CO., Zanesville, Ohio, was host to a cement safety meeting on May 27 at which four cement companies were represented, including Alpha Portland Cement Co., Ironton; Superior Cement Co., Superior; Southwestern Portland Cement Co., Osborne; and Universal Atlas Cement Co., Osborne, Ohio. J. R. Brown of the Accident Prevention Bureau, Portland Cement Association, Chicago, Ill., also was present.

## Modular Masonry Units

EXECUTIVE SECRETARY E. W. DIENHART, National Concrete Masonry Association, has called attention to a request by Col. H. B. Zachrisson, Corps of Engineers, U. S. Army, in charge of specifications for veterans hospitals, for names of concrete masonry

manufacturers who are prepared to furnish units conforming to dimensions required for modular design. Modular design will be used in drawing plans and writing specifications for the substantial program of Veterans hospitals.

## Australian Cement Producers Change Name

CEMENT & CONCRETE ASSOCIATION OF AUSTRALIA is the new name of the former Australian Cement Manufacturers' Association. In announcing this change, the notice states, "This policy is directed towards the provision of an expanding service to the users of portland cement, aimed principally at assisting them in the solution of any problem that may confront them. The Association is in no sense of the word a sales or marketing organization. As part of the expansion of its service, the Association has established an up-to-date library which you are invited to use freely; and is extending its contacts overseas in order that the benefits of cement and concrete research abroad may be more freely available to Australia."

## Constructing Pack House

SUPERIOR CEMENT CORPORATION, Superior, Ohio, is building a modern pack house, having a steel frame and corrugated metal siding and roofing,

at a cost of \$120,000. The plant, now under construction by The Rust Engineering Co., replaces a pack house destroyed by fire last October.

## Cement Production

BUREAU OF MINES reports that production of finished cement during March, 1947, totaled 14,205,000 bbl. or 26 per cent greater than that reported for March, 1946. Mill shipments reached 12,133,000 bbl., a decrease of 5 per cent from that reported in the same month of the previous year. Production of 40,299,000 bbl. of cement for the first quarter of 1947 was 33 per cent above that reported for the first quarter of 1946, but shipments show an increase of only 4 per cent. The difference is shown in stocks which have increased from 10,921,000 bbl. on December 31, 1946, to 22,184,000 bbl. on March 31, 1947.

Demand for cement was higher in eight districts and lower in 11, than that reported for March, 1946. The decline in demand for cement is attributed to a continued shortage of railroad cars, the rapid rise in costs, and a shift from a sellers' toward a buyers' market in the construction industry.

The long-term trend in production of finished portland cement continues upward and shows an increase in March, 1947, over the preceding month.

The following statement gives the relation of production to capacity, and is compared with the estimated capacity at the close of March, 1947 and March, 1946.

	RATIO (PER CENT) OF PRODUCTION TO CAPACITY				
	Mar. 1947	Mar. 1946	Feb. 1947	Jan. 1947	Dec. 1946
The month .....	69.0	55.0	68.0	66.0	71.0
12 months .....	72.0	48.0	71.0	70.0	68.0

## Pavement Yardage

AWARDS OF concrete pavement for May and for the first five months of 1947 have been announced by the Portland Cement Association as follows:

	Square Yards Awarded	
	During May, 1947	During First 5 Months of 1947
Roads .....	2,607,164	9,037,933
Streets and Alleys....	1,185,715	4,686,953
Airports .....	35,416	627,020
Totals .....	3,828,295	14,351,906

## Making Asbestos Cement

THE PARAFFINE COMPANIES, INC., is erecting a \$1,000,000 asbestos cement products plant at Redwood City, Calif., adjoining the Rubber & Asbestos Works, a subsidiary, where magnesia insulation products are made.

## Superior Installs Collectors

SUPERIOR CEMENT Co. has announced that its Concrete, Wash., plant is now installing dust collectors which will remove 85 per cent of the stack dust.

## COMING CONVENTIONS

**American Concrete Pipe Association, 40th Annual Convention, Hotel Roosevelt, New Orleans, La., March 11-13, 1948.**

**American Road Builders' Association, Exposition of new Construction Equipment, Soldier Field, Chicago, Ill., July 16-24, 1948.**

**California Associated Concrete Pipe Manufacturers, Fall Meeting, Bakersfield, Calif., October 24-25, 1947.**

**National Industrial Sand Association, Fall Meeting, Grove Park Inn, Asheville, N. C., October 1-3, 1947.**

**National Ready Mixed Concrete Association, Directors' Meeting, French Lick Springs, French Lick, Ind., August 12-14, 1947.**

**National Sand and Gravel Association, Directors' Meeting, French Lick Springs, French Lick, Ind., August 12-14, 1947.**



## Settle Cement Strike

WITH the end of the long strike of cement workers in the East, the cement shortage which has held up building operations is expected to be overcome within a few weeks with all plants going into full production. The basic wage of 85¢ an hour was increased 15¢ an hour in the Lehigh Valley. One of the bones of contention was the question of packing house pay. The settlement of this issue was in favor of the cement companies. Packing house workers wanted time-and-a-half for all work after 6 p.m. even if the shift started at 3 p.m., but the new clause reads:

"The work available shall determine the number of men to work on any day of the week and also the time at which the men shall be called to work. The starting time of the packhouse crew or crews as determined by the work available shall be no later than 9 a.m.

"When necessary, packing crews will work reasonable overtime and additional crews may be called out to work on later shifts with shift differentials applying.

"Contract workers in the packhouse, if required to remain on the job when not engaged in packing, shall apply their time to such other work as may be assigned and will be compensated for such work at their agreed hourly rate. Overtime for all packing work in excess of eight hours in any day or 40 hours in any week will be paid at time and one-half rates."

## Start Gravel Operation

UTAH SAND AND GRAVEL Co., Salt Lake City, Utah, started sand and gravel operations at the Evanston, Wyo., plant on May 1. Kenneth Curtis, plant superintendent, announced that it would be in operation from May 1 to October.

## New Consolidated Plant

CONSOLIDATED ROCK PRODUCTS Co., Los Angeles, Calif., has placed in operation its new Hewitt plant. It is a modern crushing and screening plant, embodying some new features.

## Correction

THERE was a typographical error in the Francis formula for the flow over weirs, in the article by Nathan C. Rockwood on "Recent Progress in Sand Classification," beginning on p. 100 of the June issue. The formula on p. 127 is given as  $Q = C\sqrt{2gH} \times LH^2$ . The discussion which follows is correct, but the formula contains one too many Hs. The correct formula is

$Q = C\sqrt{2g} \times LH^{\frac{3}{2}}$ , or as it could be written  $Q = C\sqrt{2gH} \times LH$ , the  $\sqrt{2gH}$  being the velocity, and LH the area of the flow.

## Coal Concern Interested In Agricultural Limestone

HANNA COAL Co., Cleveland, Ohio, has appointed a committee of five soil conservation experts to advise it concerning agricultural limestone operations. The Duncanwood limestone plant near Martins Ferry, Ohio, is being studied for this purpose. It is reported that the Hanna Coal Co. has millions of tons of limestone properties which can be operated in connection with coal shipping activities.

## Open Limestone Quarry

THE SOLVAY CORPORATION has purchased 1500 acres of land near Illmo, Mo., for the purpose of opening a limestone quarry, according to Jos. M. Perkins, in charge of operations. It is expected that the quarry products will be shipped to one of the company's chemical plants at Baton Rouge, La.

## Starts Gravel Plant

K. C. BELLOW, contractor and engineer, Sheridan, Wyo., has announced the opening of a sand and gravel division in connection with his contractor and engineering division. The new plant will be located west of Sheridan, and is said to be one of the most modern screening and washing plants in northeastern Wyoming.

## Ohio Compensation Bill

A BILL has been passed by the Ohio legislature which increases the maximum weekly award from \$21 to \$25 under workmen's compensation. It places a maximum of \$200 for treatment of workmen who contract silicosis.

## Move Offices

CUMBERLAND PORTLAND CEMENT Co., has moved its general and sales offices from Cowan, Tenn., to Chattanooga. Permanent quarters have been obtained in the Chattanooga Bank building.

## Going Into Ready Mix

BUFFALO GRAVEL CORPORATION, Buffalo, N. Y., has been granted a building permit to erect a concrete mix plant at 1140 Northland avenue to cost \$50,000.

## Start Gypsum Plant

STANDARD GYPSUM Co., of California, Long Beach, Calif., has announced that production has started at its gypsum lath and board plant. Claude E. Harper has been appointed assistant general manager in charge of these operations. The new plant will be equipped with Coe driers and Ehram calcining equipment.

## Build Ready Mix Plant

SAGINAW PRODUCTS Co., Saginaw, Mich., has started work on a new ready mixed concrete plant on Water

street. The plant will have a capacity of 700 cu. yd. of concrete daily. Crushed stone will be used for aggregate. Another project of the company announced by President Elmer L. Huebner is a 420-ft. dock which will be used in handling stone received by boat for reshipping by rail and truck.

## Front Cover Picture

ON the July cover of ROCK PRODUCTS is illustrated the quarry of The Funkhouser Co., Hagerstown, Md., one of the largest slate producers. Slate is not only used for the familiar school blackboards, but also is a very important source of roofing granules and slate sheet roofing. In the quarry illustration may be seen a DW10 Caterpillar Diesel tractor pulling an Athey PD10 trailer hauling slate rock from the quarry to the crusher. This quarry is at Delta, Penn.

## To Make New Product

READING CONCRETE PRODUCTS & SUPPLY, Reading, Ohio, is now set up to make 10,000 concrete block per day, but plans are underway to increase facilities for handling materials. R. E. Francis, manager, also will announce in the near future a new building unit in concrete.

## Building Large Stone Plant

THE AUSTIN BRIDGE Co., is now constructing a large crushing plant at Chico, near Decatur, Texas. This new plant is located near the Rock Island railroad which will build a siding to the site. Southwest Stone Co. also operates a plant at Chico.

## Adds Ready Mix

POLLOCK CONCRETE BLOCK MANUFACTURING Co., Trenton, Mo., will also supply ready mixed concrete from a new plant now being erected. Curing capacity also will be increased at the block plant.

## Increase Gravel Holdings

PURDY INVESTMENT Co., INC., operator of the sand and gravel pit near Brinkhaven, Ohio, has purchased 119.21 acres on Route 62 just west of Brinkhaven to expand its present operations.

## Limestone Block

FRANK SNYDER has announced that his concrete block plant at Marengo, Ohio, will be producing 45,000 "white limestone-cement" concrete block per day sometime in July.

## Sand Plant Fire

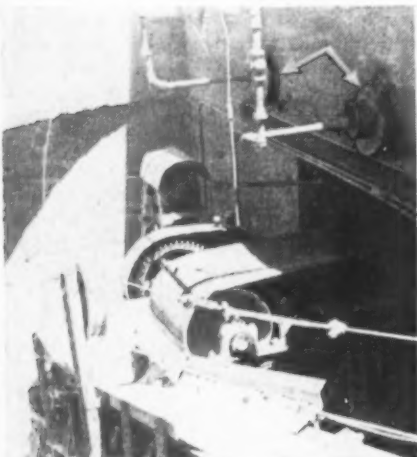
LIBERTY MOLD SAND Co., located three miles south of Newark, Ohio, was destroyed recently by a fire.

# HINTS and HELPS

PROFIT-MAKING IDEAS DEVELOPED BY OPERATING MEN

## Bin Heater

ALBUQUERQUE GRAVEL PRODUCTS Co., Albuquerque, N. Mex., has a ready mixed concrete plant in the down-



Gas burners (note arrows) installed in steel pipes located along bin gate openings prevents freezing of aggregates in winter

town section, but its sand and gravel plant is outside the city and aggregates must be hauled to the plant in dump trucks.

At the ready mixed concrete plant there are four concrete bins, the tops of which are at road level facilitating truck dumping. Under these bins is a reclaiming belt conveyor fed by one or more of the 12 clamshell type gates. As the wet aggregates can freeze in winter, preventing a free gravity flow of materials, the company installed two parallel steel pipes, each about 12 in. in diameter, running the length of the four bins and so arranged that the pipes pass close to the outlet of the bins.

Natural gas burners are installed at one end of each of the two pipes, heating the aggregates to prevent freezing and induce free-flowing of material. At the opposite end of the pipes are suitable stacks for draft.

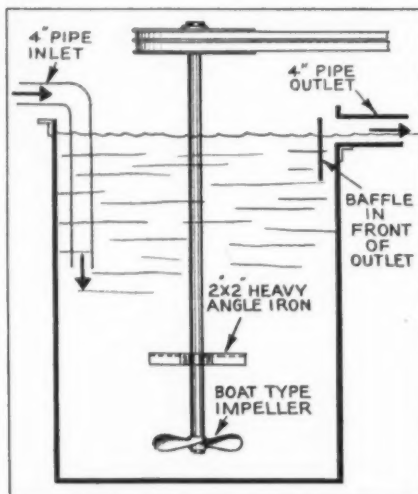
## Agitator Sanding-Up Easily Corrected

A WESTERN PLANT, using the flotation process for removal of a calcium bearing mineral from rather coarsely ground ore (minus 48-mesh), placed a 6- x 6-ft. conditioner ahead of the Fahrenwald flotation machine in the flow. The conditioner had a 5-hp. motor "V"-belted direct to the vertical shaft which carried a 16-in. diameter boat-type impeller mounted on the lower end.

This machine quite frequently sanding-up, stalling the agitator motor and resulting in much delay and confu-

sion. To correct this condition a second impeller (18-in. in length and made of 2- x 2-in. angle iron) was bolted to the agitator shaft about 18-in. above the original one. Thereafter no sanding-up occurred and the drive motor easily carried the load.

The first angle iron impeller did not last long due to the abrasive action of the mineral; but now that the

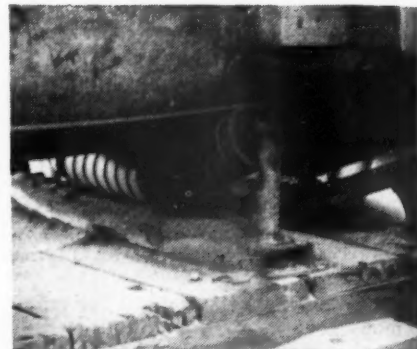


Method of installing angle iron impeller to prevent sanding-up of conditioner in flotation process

added impeller is hard surfaced with stellite, it wears longer than the cast iron boat-type one.

## Carrier Rolls

AT THE IRVINGDALE PLANT of the Consolidated Rock Products Co., Los Angeles, Calif., field conveyors are

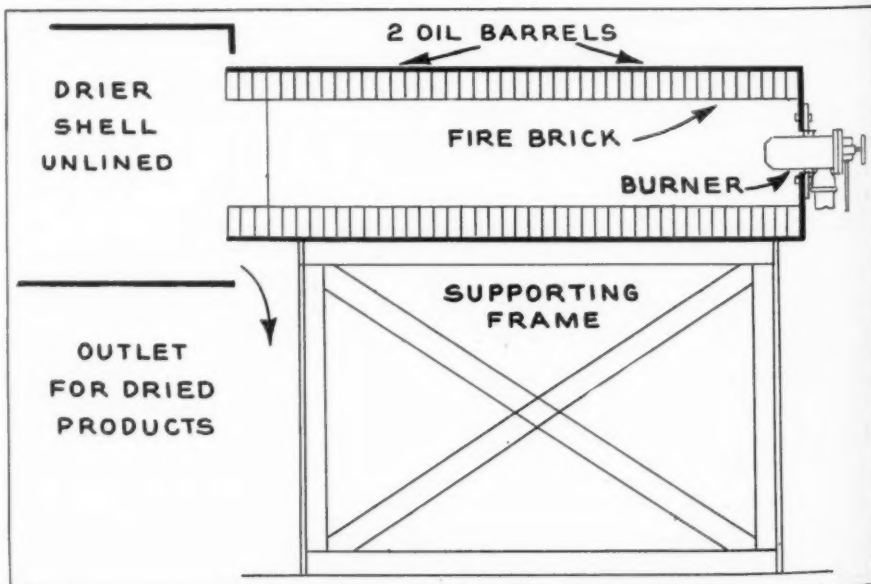


Conveyor belt carrier rolls covered with  $\frac{3}{4}$ -in. rubber vulcanized to the steel rolls takes impact of large stone

used to deliver the pit run material to the plant. Some of the gravel is large size, ranging in excess of 12 in. in diameter. When these large pieces fall to the field belt from the pit hopper there is considerable shock to the carrier rolls just under the discharge lip of the field hopper. As ordinary steel carrier rolls would not stand the "gaff," rolls with a  $\frac{3}{4}$ -in. coat of rubber vulcanized to the steel rolls were tried and have been working out successfully to date.

## Rotary Drier Combustion Chamber

ORIGINAL DESIGNERS of a rotary drier installation provided a brick fire-box with checker-work and baffles to insure continuous and smokeless flame. The oil burner was placed at right angles to the long axis of the drier. An installation of this type required a lot of brick-work, tie rods,



Combustion chamber for drier constructed with two oil barrels lined with fire brick



etc., and after a few years looked rather unsightly; brick-work cracked and sagged, and finally the entire assembly had to be junked.

As a result the brick-work was thrown out entirely. First, a 15-in. steel pipe, 6 ft. long was installed, lined with 2 in. of a patented fire-resistant clay product. This tube was mounted on a suitable pipe frame along the center line of the drier, and was used as the combustion chamber. It saved about 150 gal. of oil per day as compared with the fire box installation, but due to the thin insulation, the pipe burned out in a few months. To solve this problem, two oil barrels were welded together, end-to-end, and this improvised shell was lined with standard fire-brick. The combustion tube so formed was then rolled up on the "A" frame support, and the oil burner installed at one end, as shown in the illustration. This installation has given excellent service with a much lower oil consumption than the first fire box.

QUARTZITE STONE Co., has opened up a new quarry near Sylvan Grove, Kans., known as Creek George.

## Air-Conditioning Jaw Crusher Drive

By ROYAL E. FOWLE

"Air conditioning" in a primary jaw crushing plant? It does seem a rather unusual practice, yet the Granite Rock Co., Watsonville, Calif., does use filtered and cooled air to protect the motor and drive on its 48- x 60-in. Allis-Chalmers primary jaw crusher (Fig. 1).

A single, air-tight, steel frame, galvanized sheet metal structure was built to form a motor house and an enclosure for the entire V-belt drive, Figs. 1 and 2. The panel joints, door and crusher drive shaft openings were made air-tight by means of felt gaskets. The floor was made air-tight by the use of welded steel plates.

The roof of the wing which encloses the V-belt drive has sufficient rise to form a warm air trap directly over the large driven crusher pulley. Located here is a covered stack having a damper for regulating the escape of air, Fig. 1.

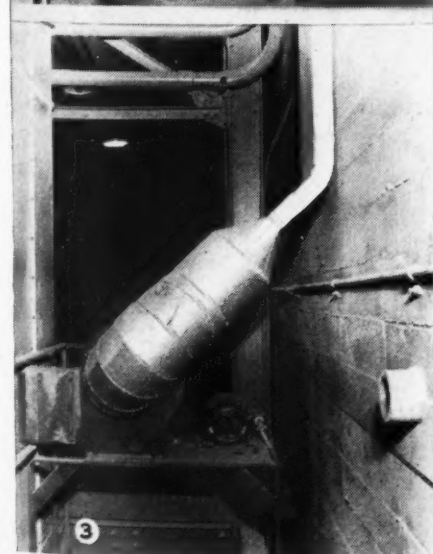
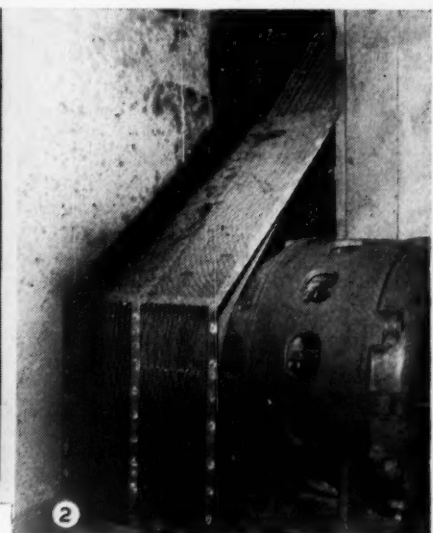
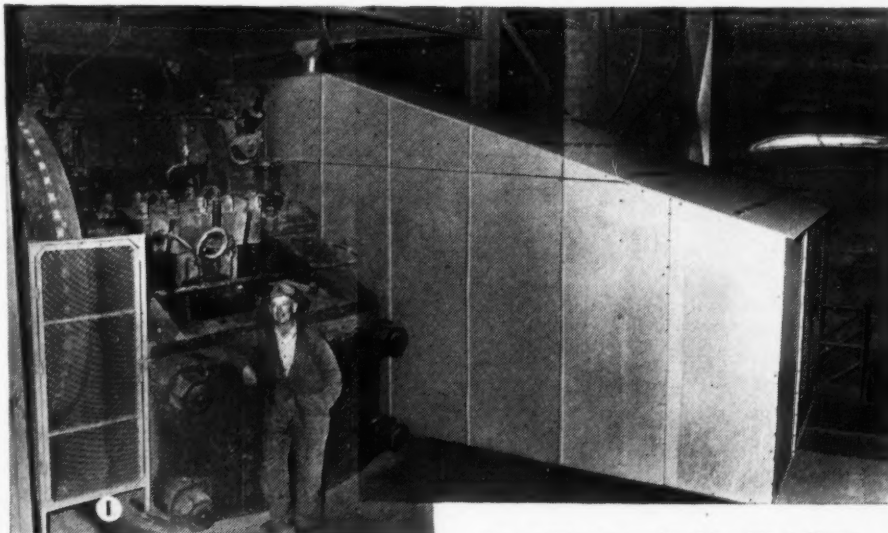
The entire structure is placed under slight pressure by means of a 2-hp.

blower, Fig. 3, which draws its air through approximately 40 ft. of galvanized sheet metal duct placed against the cool concrete wall of the crusher pit. (See ROCK PRODUCTS, April, 1947, p. 91.) The intake (Fig. 4) of this duct is placed in a shaded area between the crusher building and the building housing the electrical control system. A readily cleaned filter is placed over this intake to remove dirt particles, bugs, etc.

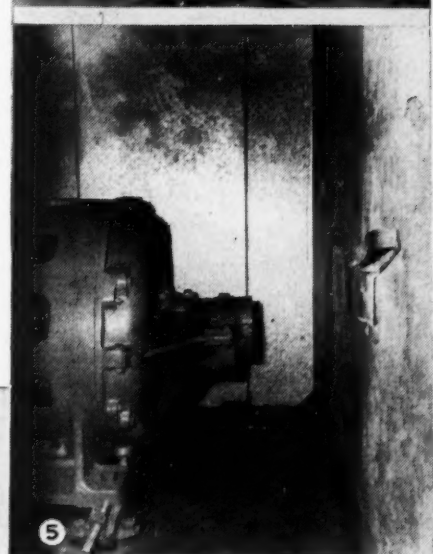
The 2-hp. blower discharges directly opposite and near the off-pulley motor bearing of the open frame, 200-hp., Allis-Chalmers slip-ring motor, Fig. 5. The blast of cool air not only aids in cutting down the motor temperature and the temperature of the V-belts; it also makes for a dust-free condition which increases the operating life of the V-belts, the motor bearings, windings, brushes and slip rings.

## Work Starts on Gypsum Plant

WESTERN GYPSUM Co., Sigurd, Utah, has started construction of a \$1,000,000 plant at Richfield to augment present facilities.



Air-conditioning crusher drive. Fig. 1: Showing 48- x 60-in. jaw crusher with housing covering motor and V-belt drive. Note covered stack at top of inclined motor house roof which has damper for regulating escape of air and pressure, Frank Swearingen, superintendent, standing alongside. Fig. 2: Interior of motor and drive housing. Fig. 3: Connection between blower and motor housing was made of heavy painted canvas to dampen vibration. Fig. 4: Air intake of duct in shaded area. Fig. 5: Looking through open door of motor housing, showing screen covered air duct discharge, the screen protecting motor in case of blower blade failure



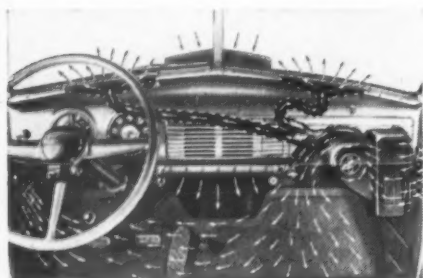


# new

# MACHINERY

## Improved Truck Models

CHEVROLET MOTOR DIVISION, General Motors Corporation, Detroit, Mich., has announced a new line of trucks and commercial cars which are said

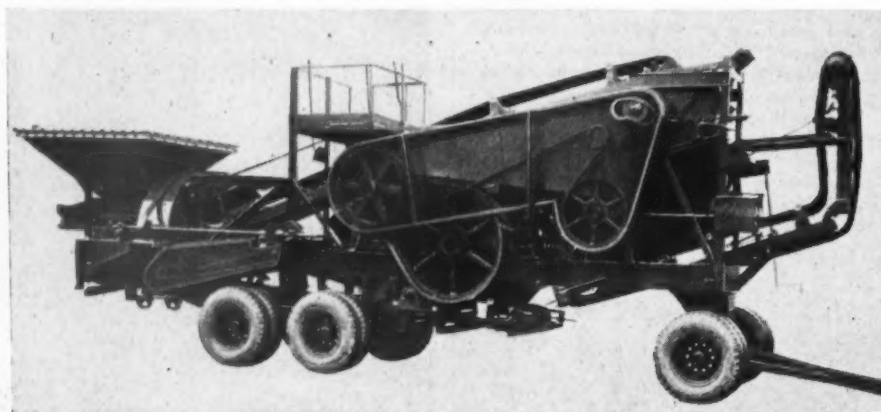


Ventilating system for truck cab promotes comfort and prevents fogging of windshield

to embody greater comfort, convenience and safety for owners and drivers. Cabs are 8 in. wider and 7 in. longer with larger windshield and windows. Gross vehicle weights of the new trucks range from 4000 to 16,000 lbs., and are powered by either the Thrift-Master engine or the Load-Master engine. These models have the full-floating hypoid-gear rear axle, and vacuum-power brakes are standard on all heavy-duty models. Optional equipment includes a new ventilating system which draws fresh air from the outside, forces used air out through vents at the rear of the cab, and minimizes fogging of windshield and windows.

## Portable Gravel Plant

PIONEER ENGINEERING WORKS, Minneapolis, Minn., has brought out a portable gravel plant, known as the 34-S Continuo, which is designed for setting up where material is required in a hurry. It meets state highway load limits for weight and dimension.



Portable sand and gravel plant takes feed at rear end of plant and processed material is delivered from the front end

It has a 7-ft. hopper equipped with mechanical feeder. Units consist of a 1024 jaw crusher with SKF bearings, a 16- x 24-in. roll crusher with Timken bearings, and a 2½-deck 3- x 8-ft. vibrating screen, equipped with sand screen section. V-belts drive the units from power units mounted on the plant or from an optional drive through a power take-off on a tractor. It is said that only two men are required to operate the plant, one on the dragline or shovel, the other on the plant itself.

## Axial Air-Gap Motor

FAIRBANKS, MORSE & Co., Chicago, Ill., has introduced the Axial Air-Gap electric motor which is said to be a



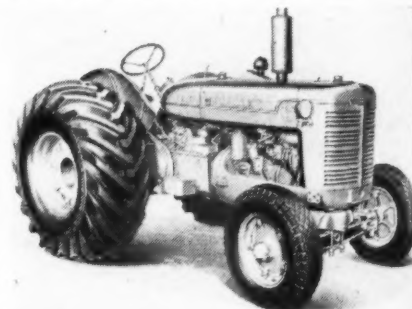
Frame size comparison of 5-hp. motor; to the left, conventional construction, to the right, axial air-gap construction

radical departure in design. It is distinguished by the fact that the magnetic lines of force follow a path parallel to the shaft (or axis of rotation) as compared to a radial path taken by the magnetic flux in the conventional motor. R. H. Morse, Jr., vice-president and general sales manager of the company, announced that more than 20,000 are now serving industry.

This new line of motors, ranging in size from ¼- to 10-hp., is suitable for horizontal or vertical flange mounting, or on an angle base for belt drive. Space and weight reduction are said to be the outstanding features. It is said that this motor can be easily inspected, cleaned and lubricated, and it operates with a cooler rotor.

## Single Rear Tires For Industrial Tractors

INTERNATIONAL HARVESTER Co., Chicago, Ill., has announced that its I-9 (55-hp. gasoline engine) and ID-9 (52-hp. Diesel engine) industrial wheel tractors are now available with single rear tires and wheels to facilitate off-the-highway movement of scrapers, wagons and trailers. This change was made to eliminate the objections raised against dual wheels in off-the-highway hauling of trailing equipment. Dual wheels leave a ridge in the center of the track in soft ground and consequently make it difficult for the single-tired equipment following in the track to stay in line.



Diesel-powered tractor equipped with large single-tire wheels

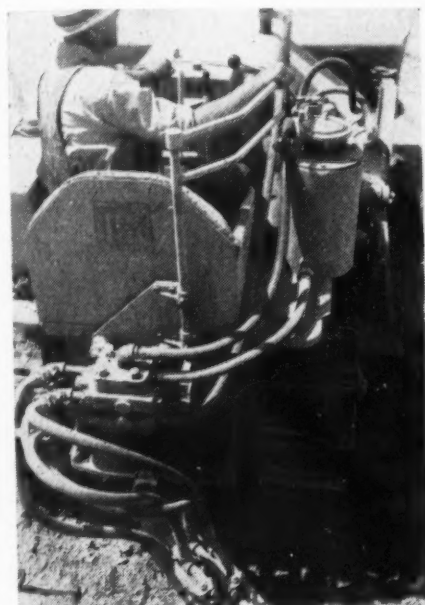
The new 18.00 x 26 single rear tires give the same tread as the dual-tired units and permit maximum drawbar pull of 5500 to 7500 lbs., depending on ground conditions and amount of weight on drive wheels.

## Truck Tire Uses Nylon

GOODYEAR TIRE & RUBBER Co., Akron, Ohio, has developed a large truck tire with all plies constructed of special nylon cords designed for rugged truck tire service. It is claimed to be the first truck tire of all nylon plies introduced to the market. Development of the all-nylon truck tire is made possible, according to Dr. R. P. Dinsmore, Goodyear vice-president in charge of research and development, through a pre-stretching technique for nylon cord. A 50 per cent increase in strength is claimed for this tire.

## Hydraulically-Operated Tractors

LA PLANT-CHOATE MANUFACTURING Co., INC., Cedar Rapids, Iowa, has developed a hydraulic conversion unit to hook into existing hydraulic sys-



Close-up of dual valve hydraulic conversion unit on D-4 tractor

tems on D-2 and D-4 tractors equipped with hydraulic dozers. These new units make it possible to operate a 2- or 4-cu. yd. scraper in combination with present dozers without requiring an additional hydraulic system for scraper operation. Conversion units are available in two designs; one for adapting the new 2-cu. yd. LaPlant-Choate scraper to present D-2 hydraulic dozers and the other for adapting the 4-cu. yd. scraper model to D-4 dozer units.

For D-4 tractors, equipped with hydraulic dozers, the conversion assembly consists of two valves which mount on the rear of the tractor with manifold and necessary hose for connections to the hydraulic circuit. One valve operates the scraper bowl and the other operates the ejector and apron of scraper with all the advantages of hydraulic operation. The conversion unit for D-2 tractor-dozers consists of special combination piping fitted into the hydraulic system, and is operated by the same valve which operates the dozer.

### Stronger Belt

UNITED STATES RUBBER Co., Akron, Ohio, has announced the development of a conveyor belt which is said to be 250 to 400 per cent stronger than previous rubber-fabric belts. It has been designed to convey bulky materials over long distances. As announced by W. H. Cobb, vice-president of the company, the key to increased strength is a new textile construction of nylon and Ustex yarn that in-

creases the permissible working tension of each ply two and one-half times and permits the use of more plies. The new product has been designed for use in mines, quarries and large dam construction projects. Other advantages claimed for this belt are low stretch lengthwise and increased flexibility crosswise, making possible a longer and heavier belt.

## Improved Conveyor Belting

HEWITT RUBBER DIVISION, HEWITT-ROBINS, INC., Buffalo, N. Y., has announced that Maltese Cross conveyor and elevator belting again is in production after being withheld from manufacture during the war because of government restrictions on the use of premium quality materials. It is offered in straight-ply, stepped-ply and shock-pad construction.

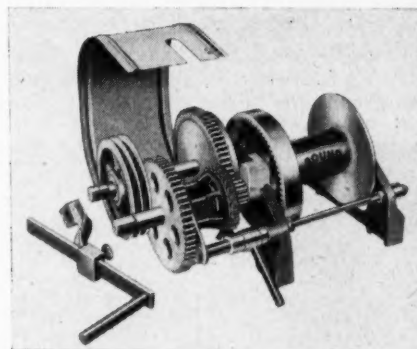
## Cast Iron Electrode

HARNISCHFEGER CORPORATION, Milwaukee, Wis., has announced Nicast, a new electrode. It is said that with this electrode cast iron can be welded and finished as easily as steel. The rod can be used with either a.c. or d.c. The electrode is said to be very satisfactory for repairing broken castings, building up worn castings, and welding cast iron to steel.

## Power Winch

DAVID ROUND & SON, Cleveland, Ohio, is now in production on a 5-ton capacity power winch, known as Round No. 102. Fitted with a V-belt pulley and connected to a 2-hp. reversible type motor, this unit is intended for industrial and construction use. It is said to be particularly recommended as a car puller.

The winch is equipped with an automatic friction disc-type brake, similar to that commonly employed in electric hoist construction, providing safety and control for lowering and suspension of load. The pawl may be lifted from the ratchet by means of a counter-weighted lever, releasing



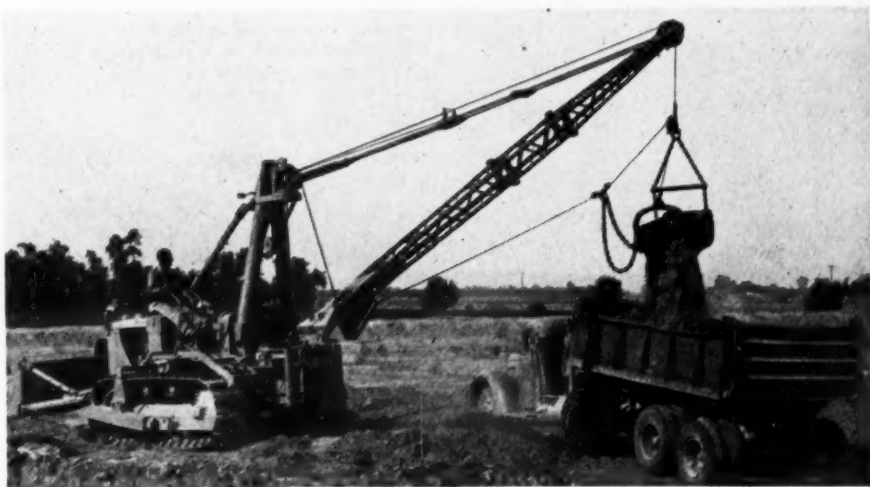
Five-ton capacity power winch

friction brake and permitting cable to be run out as rapidly as desired. Rope capacity of the regular drum is 165 ft. of  $\frac{5}{8}$ -in. wire rope and 285 ft. of  $\frac{1}{2}$ -in. wire rope. The gear ratio is 90.3 to 1.

## Multi-Purpose Dragline, Clamshell for Tractor

HYSTER Co., Portland, Ore., has designed a combination dragline, clamshell, and crane that retains the utility of a track-type tractor equipped with a bulldozer known as the Hystaway. It is designed for installation on the D6 and D7 models of Caterpillar track-type tractors. Utility use of the bulldozer is possible with the complete Hystaway installed, but full production bulldozer use is ready in one hour with removal of all but the Hystaway transmission. It is said that the unit can be attached in two hours or removed in one hour. Full track oscillation is available on a standard tractor and track rigidity can be secured by turning a crank at the masthead.

This combination unit is being used in many places where a shovel cannot walk, on jobs where it is not profitable to bring in a shovel and in digging ditches too wide for a shovel to straddle. It has been used very effectively to lay pipe lines; draglining the ditch, operating as a crane to lower the pipe and then backfilling with the bucket or bulldozer.



Combination unit on tractor operated as a dragline



## Small Bagging Machine

ST. REGIS PAPER CO., New York, N. Y., has announced that it is now in production on its 100-LS valve bag



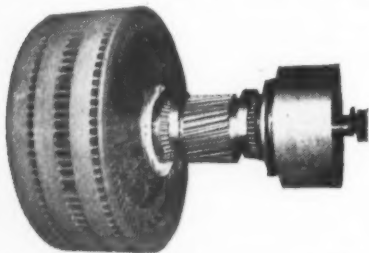
Small type bagging machine has a number of applications

filling machine designed for low-cost operation.

This machine has been used to package a number of powdered products in the chemical industries; such as magnesium silicate, pigments, carbon black, acid sodium pyro phosphate, and undoubtedly has a number of places where it can be used economically in the rock products industry.

## Hoist for Large Electric Shovels

HARNISCHFEGER CORPORATION, Excavator Division, Milwaukee, Wis., is now offering its "magnetorque" hoist



Hoist drive for 6-cu. yd. electric shovel promotes smoother operation

drive as standard equipment on its 6-cu. yd. electric shovels.

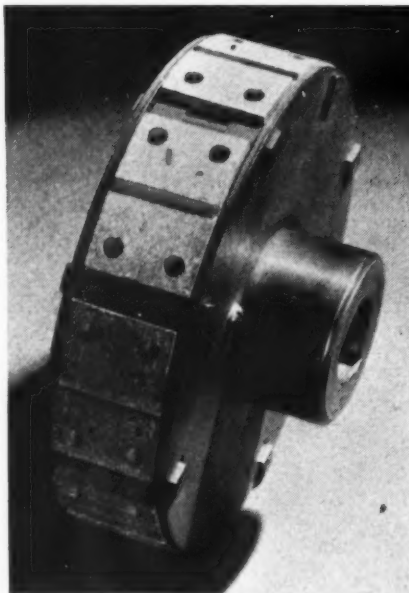
This principle of hoisting, which has been used on other P & H electric shovels, is said to simplify the entire hoisting machinery including the power units. Magnetorque drive replaces

the usual generator and d.c. motor with a simpler a.c. motor. It has been likened by the manufacturer to "fluid drive" because it comprises two concentric electric magnets with one rotating within the other. The amount of torque to be transmitted is controlled through variable energizing of the magnetic field, and hoisting operations are therefore claimed to be smoother.

Other advantages claimed for this control are: smooth Ward-Leonard performance with faster plugging, a reduction in peak power demands and power costs, the slip-friction hoist clutch is eliminated, and shock loads are cushioned.

## Clutch for Automatic Starting of Compressors

MERCURY CLUTCH CORPORATION, Canton, Ohio, has developed a mercury-actuated clutch which makes possible automatic starting of air compressors. The clutch permits the driving motor to attain full speed be-



Clutch rotor assembly designed for use on Worthington compressor. Friction shoes engage the inner surface of flywheel, the actuating force being generated by a small quantity of mercury sealed within the clutch itself

fore the compressor turns, eliminating the need for pressure release valves. This automatic clutch incorporates a "time delay" factor which retards the engagement for a second or more, long enough to permit the motor to come up to full speed before any load is applied. The motor is then able to bring to bear its greatest torque plus the inertia of its rotor to start the load. Motor current is greatly reduced and the starting windings are protected.

Mercury is used as the control medium because of its high specific gravity. Centrifugal force acting on a small amount of mercury produces

hydraulic pressure which is dependent upon the "head" of mercury rather than the amount. This pressure is utilized without the use of levers or other mechanical means to cause the engagement of the friction elements of the clutch.

## Gage Case

HELICOID GAGE DIVISION, AMERICAN CHAIN & CABLE CO., Bridgeport, Conn., has announced a newly developed gage case. This case is designed to accommodate safety blowout discs. It is made of a high compression molded aluminum alloy, the surface of which is treated by a patented process to prevent corrosion. Over this treated surface there is a black baked-on finish. The case is claimed to be weather-proof since it is provided with a synthetic rubber sealing gasket and a stainless steel snap ring.

## Puncture-Sealing Inner Tube

UNITED STATES RUBBER CO., has announced the return to production of its puncture-sealing inner tube, which contains plastic rubber inside the crown to surround puncturing objects. By sealing the aperture caused by the puncture, the plastic rubber prevents loss of air both before and after the object is removed. It is said that repairs are usually unnecessary because the plastic material flows back into place as soon as the object is taken out.

## Add Excavator Models

TRACKSON COMPANY, Milwaukee, Wis., has announced its Model T6 Traxcavator, making four models available for four sizes of Caterpillar track-type tractors. Bucket capacities now range from 1/2 to 4 cu. yd.

The Model T6 is mounted on the Caterpillar D6 tractor with buckets of 1 1/2- or 1 3/4-cu. yd. rated capacity as standard. Quarry, heavy-duty and other buckets for special uses can also be supplied. A bull-dozer blade, interchangeable with the bucket, also is available.



Heavier model excavator may be equipped with 1 1/2-cu. yd. or 1 3/4-cu. yd. bucket





Two-wheel tractor pulling twin-cable scraper

## Two-Wheel Tractor For Stripping

THE HEIL Co., Milwaukee, Wis., has designed a two-wheel tractor for stripping and road construction work, known as the Heiliner. This tractor combination is said to load 15 cu. yd. in less than a minute, and travel 20 miles per hour. It is highly maneuverable and steers easily, according to the manufacturer. Large Goodyear Sure Grip tractor tires are used.

An engine-driven hydraulic pump furnishes steering power controlled by the steering head, the wheel being merely the hydraulic control-valve lever for the power steer. It can be operated manually to provide ample steering control in case of failure of the power system.

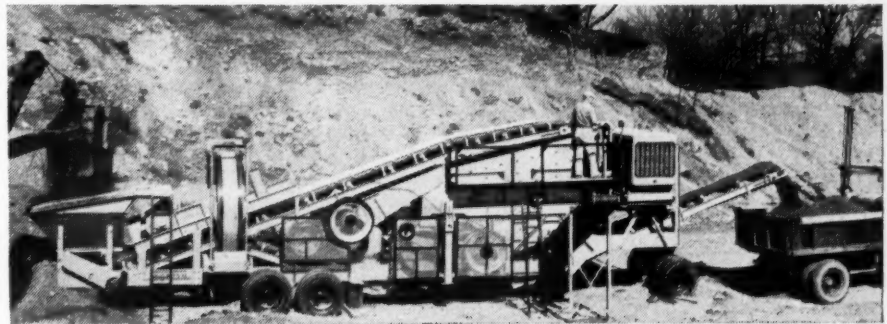
## Three-Stage Gravel Plant

UNIVERSAL ENGINEERING CORPORATION, Cedar Rapids, Iowa, has announced a three-stage portable gravel plant, known as the Universal Twin-Dual Master.

Featured in this unit is the Twin-Dual roll crusher which provides, with the primary jaw crusher, three stages of crushing. The roll crusher consists of two sets of different diameter rolls mounted on common roll shafts and operating simultaneously. One-half its

crushing capacity is devoted to the first secondary crushing, and the other to the second or finishing stage. The manufacturer points out that because of this two-stage secondary reduction, the jaw crusher can operate with up to 100 per cent wider discharge opening, increasing its output and reducing jaw wear.

The primary crusher is a 10- x 24-in. roller bearing jaw crusher, and the twin secondary is a 24-in. roller



Showing three-stage portable crusher in action

bearing star gear roll crusher. It is further claimed by the manufacturer that the rolls make possible the use of the weight-saving 10- x 24-in. primary crusher because of the wider discharge opening. Screen equipment

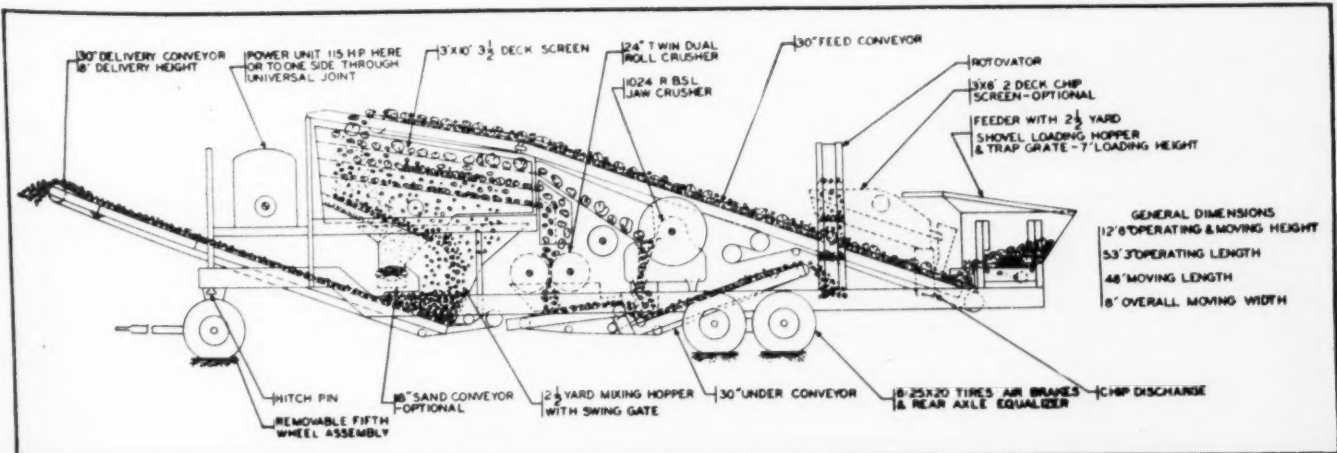
comprises a 3½-deck, 3- x 10-ft. roller bearing gyrating screen mounted on an incline. Conveyors have 30-in. belt, and a large capacity revolving elevator (Rotovator) eliminates a return conveyor system and shortens overall length. The gooseneck truck is of 12-in. channel frame construction, and is equipped with 12 pneumatic tires with equalizers on rear wheels. Air brakes are standard equipment.

The plant is fed by shovel or drag-line into a charging hopper equipped with built-in reciprocating feeder and trap grate. A swivel feed attachment is offered to meet various feeding conditions. A 3- x 6-ft. two-deck chip-screen can be mounted inside the elevating Rotovator without making any changes in the basic plant. All drives are through V-belts except two short drives. This portable plant weighs 47,820 lbs. without power, moving height and operating height is 12 ft. 6 in., moving length is 46 ft. overall, and the width is 8 ft.

## Electric Bag Closer

THE DAVE FISCHBEIN Co., Minneapolis, Minn., has appointed Bemis Bro. Bag Co., exclusive distributor of its new hand electric filled bag closer.

The machine weighs less than 11 lbs., and operates from any a.c. or d.c. 110-volt line. It will close about 100 bags an hour, including cotton and burlap and most kinds of paper bags, according to the manufacturer.



Elevation showing flow of material in portable plant



View of plant from quarry floor, showing gravity flow of materials. Primary crushing house to the extreme right, conveyor inclines up to scalping screen, oversize going to bin at left. Surge pile is in the center

## Surge Pile Balances Plant Flow

Rockydale Quarries Corporation utilizes gravity to reduce transportation cost

**W**HEN Rockydale Quarries Corporation worked out its stone deposit northeast of Roanoke City to a point where further operation was inefficient, the company opened and

developed in 1944-1945 a massive deposit of dolomite on Route 220, known as the Rocky Mount highway, about two miles south of Roanoke, Va. This deposit is estimated to contain some

fifteen to sixteen million tons above grade. Reasonably deep drilling has not passed through the stone for which reason the extent of the deposit is not known. This material analyzes 45.63 magnesium carbonate and 53.70 calcium carbonate, and is ideal for agricultural limestone, a large volume of which is sold. The plant also supplies Roanoke City, Roanoke County, and a large surrounding area with concrete and highway aggregates.

### Gravity Flow Plant

A straight line plan of construction for the new plant, which has not been used in this area before, was decided upon. The cut was opened at an elevation of about 125 ft. up the side of the mountain. The primary crushing plant was located flush with the floor of the quarry.

Drilling is done with a Bucyrus crawler-mounted blasthole drill, from a 170-ft. face, and stone is hauled with an extremely short haul from the quarry face to a grizzly made of 1½ in. Manginol rods. The impurities passing this grizzly feed into a hopper and are conveyed to a dump pile



Conveyor from primary crusher to scalping screen where fines are removed



where it is from time to time pushed down the mountain side with a D7 Caterpillar tractor and bulldozer. The clean rejected material passes onto a 4- x 10-ft. Jeffrey apron feeder, which feeds into a 24- x 36-in. Telsmith jaw crusher, the discharge going by gravity onto a second grizzly made of 1½ in. Manginol rods. The material passing this grizzly feeds onto a 30-in. conveyor belt which passes under a 3-ft. standard Symons secondary crusher. Oversize material feeds into this secondary crusher which is set at 3 in. This arrangement has the advantage of keeping out of the secondary crusher the fines which form a cushion on the belt saving it from wear when the material from the Symons crusher falls on it.

This material is then all conveyed by a 30-in. Barber-Greene conveyor, 100 ft. centers, onto a surge pile. Under the surge pile is an 8- x 10-ft. concrete tunnel. In the top of this tunnel is a gate through which the crushed stone flows from the bottom of the surge pile onto a 48-in. magnetic Jeffrey feeder, which in turn feeds onto a 24-in. Barber-Greene conveyor, 90 ft. centers, which carries the material to a 4- x 10-ft. double deck Niagara scalping screen.

The fines are then scalped out and the tailings distributed to various bins, or are fed directly into two 3-ft. Symons shorthead crushers for further reduction, or into a Sturtevant ring roll mill for grinding into agricultural limestone. There is a bank of bins on either side of the scalping screen with a bucket elevator to move the product of the two shorthead crushers and ring roll mill up to three 4- x 10-ft. double-deck Niagara screens where the product is finished.

All the finishing plant is on the ground level about 125 ft. below the quarry floor. This arrangement is simple and takes advantage of the gravity drop from the quarry floor all the way into trucks under the bins for shipment. The surge pile equalizes the flow of stone so that either the quarry and primary crushing equipment or the finishing plant can operate entirely independently of the other. By rheostat control, operated from the switch house at the finishing plant, the flow of stone from the surge pile can be completely controlled.

It is also true that by having a perfectly regular flow of stone the volume that can be handled with the same crushers, elevators and screens in the finishing plant is practically double what it is when the stone comes in spurts or surges directly from the primary crushing plant.

### A Family Enterprise

HOLMAN WILLIS, the majority owner of the Rockydale company, is a lawyer by profession and got into the stone crushing business as a side line unintentionally and as a result of an



Developing high quarry face. Note the small amount of overburden

investment made with one of his clients about 25 years ago. He built the present plant during the war with the engineering assistance of W. S. Russell of Rish Equipment Co., striving throughout the entire planning to avoid additional moving parts, for simplicity, gravity flow and for labor saving devices.

Mr. Willis' three sons all worked in all branches of the business from the time they were young boys. His son, Keith Willis, decided to remain in the business permanently. He got his engineering education at the Virginia Military Institute, went into the Field Artillery during the Second World War and was captured in North Africa spending more than two years in a German prison camp. He has proved a remarkable success as superintendent where discipline learned at Virginia Military Institute and in the Army, together with a thorough practical knowledge of the business and the further fact that he has worked beside all the old employees in the plant have been of great value to him. He has accomplished some unusual results with this small and extremely simple plant. A production of 1500 to 1700 tons per nine-hour day has been obtained with better than 1000 tons daily average. Under the old plan of direct movement from the primary crusher to the finishing crushers and screens, this output would require much more crushing and screening capacity.

### Sell Gravel Business

WILLIS ZIELKE, Fond du Lac, Wis., has sold his sand and gravel business to Arthur Reetz, Arthur Schroeder, Winifred Schroeder and H. Turville.

### Agstone Plant

LEBANON LIMESTONE CO., Lebanon, Tenn., started agricultural limestone crushing operations around the first of May. Albert Stone and Dick Lawlor are owners of the plant.



Snake-hole drilling at bottom of quarry face



Keith Willis, plant superintendent



## Converting Low-Bond To A HIGH-BOND Sand

Keener Sand and Clay Co., installs mulling equipment to produce high-bond sands

**F**ACED with the loss of its market in high-bond quality sand because of economically available natural deposits the Keener Sand and Clay Co. of Columbus, Ohio, recently installed additional preparation facilities at its Huron, Ohio, plant to produce a prepared high-bond sand.

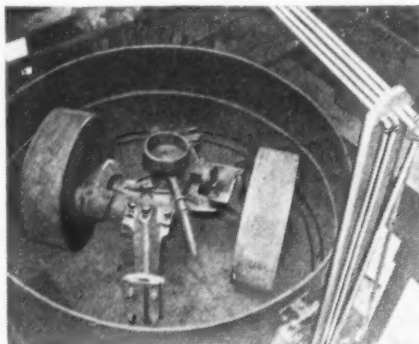
For the past half century probably one of the most widely used natural molding sands for light grey iron and malleable castings has been Sandusky Glacio-Lawstrine sand produced in the Sandusky, Ohio, area. Sand from this territory has always been noted for the finish produced on castings and the ease with which they are cleaned.

### Mulling Process

In order to make use of the large available reserves of low bonded sands a No. 3 Simpson intensive mixer was installed to blend the sand and added bonding material. This plant is designed to add whatever percentage of bonding material necessary to make the present low-bond sands equal, or even superior to the original high-bond sands.

Blending of the sand and clay bond is a mulling process in which two vertical 3400-lb. mulling rollers (38 x 11 in.) revolve on rocker arms set slightly off the true radius from a motor-driven vertical shaft. The rocker arms allow the mullers to ride with

the material and also hold the mullers an established minimum above the mulling crib pan to prevent grinding of the sand grains. The mulling crib, or tank, of 30 cu. ft. capacity has



Air-control piping installation for mixer used in mulling sand and bonding clay to produce a high-bond molding sand

two air-controlled bottom-discharge chutes.

Two plow sweeps are mounted on the center assembly with the concave outside plow feeding one muller and the inside curved plow feeding the other muller. The plows also discharge the mulled sand through the bottom-discharge openings to a belt conveyor hopper.

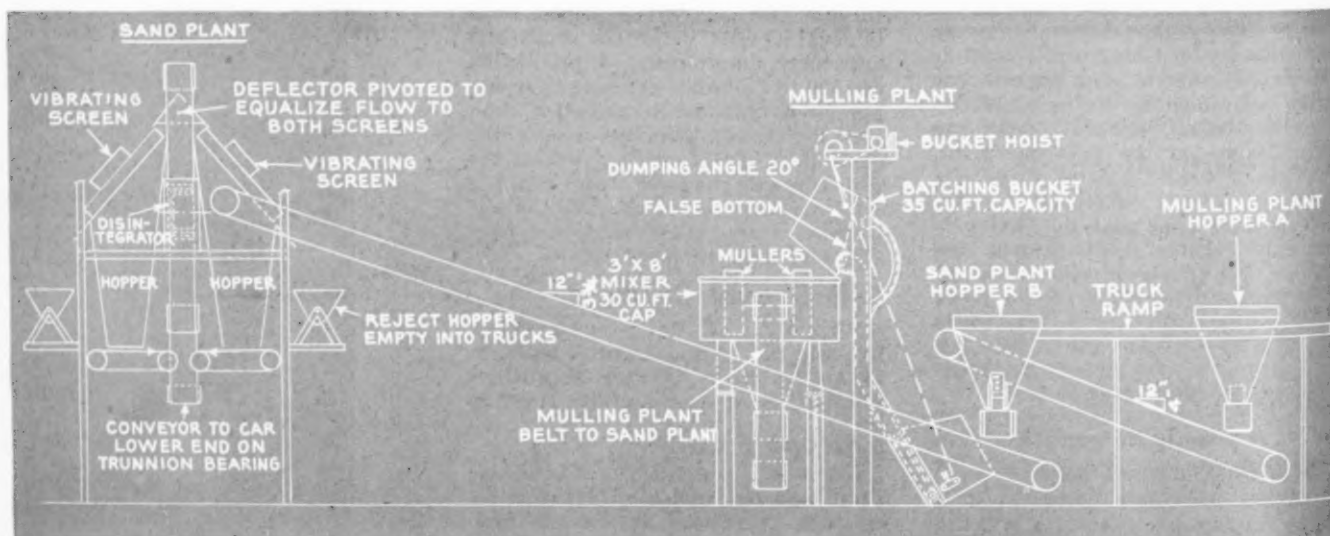
The vertical shaft of the center assembly is driven by a 40-hp. motor

and through a helical gear reduction unit, both mounted under the mulling tank. The mulling speed is about 21 r.p.m. with the actual cycle per 30 cu. ft. batch varying between 3 to 5 minutes.

### Push-Button Control of Batching

Push-button control allows rapid and uniform loading of each batch into the batching bucket. The batch usually consists of 3000 lb. of sand and 100 to 300 lb. of bonding material. The exact time of mixing cycle, and amount of bonding material are regulated to suit requirements of the customers. The 35 cu. ft. capacity batching bucket is raised and dumped by a 5-hp. cable hoist with solenoid brake control.

The highly adhesive nature of the sand being handled necessitated several changes from the standard loading equipment. In order to provide clean dumping, a false bottom was put in the bucket to give a dumping angle of 70 deg. instead of the usual 60 deg. and has proven satisfactory, no sledging or jarring of the bucket being necessary in dumping. The lower section of the hoist frame was also changed from the usual vertical position to an angle so that the bucket in loading position will catch the sticky sand scraped off the return side of the sand feeder belt. Bond material at



Elevation details of mulling plant and adjacent sand plant

present is emptied from bags into the batch bucket by hand but a 60-ton bin with automatic air-controlled feeding hopper is being constructed for bulk handling of the bonding materials. Clay, bentonite or dextrin may be used for the bonding agent.

Since grey iron foundries constitute some 60 per cent of the whole foundry industry the successful use of the mulling operation in converting a low-bond sand to a high-bond sand naturally is of major importance to the industrial sand producer.

The Sandusky sand used at the Huron plant is recovered from widely scattered mound-like pockets within a radius of six miles of the plant. The sand pockets rarely cover over a few acres, averaging 1 to 4½ ft. in depth under a shallow 6- to 12-in. soil overburden.

Overburden is scraped off with an Allis-Chalmers, Baker blade bulldozer and the sand loaded by a ¾-cu. yd. Link-Belt Skimmer shovel into 3- to 5-cu. yd. dump trucks and hauled to the plant receiving hoppers. Average daily production under favorable weather conditions is above 200 tons per 9-hour shift.

The sand plant proper processes either the low-bond sand from the truck hopper or the mulled sand. A Stedman disintegrator breaks up lumpy material and twin Jeffrey Trolly screens remove foreign or oversize material, using ¼-in. mesh screens when sand is dry and changing to ⅜-in. mesh when sand is wet. The natural sand is very fine and requires no screen sizing.

The Keener Sand and Clay Co. also has three plants in Gallia County, Ohio. The company president and general manager of operations is C. P. Helmick; secretary and treasurer, E. M. Durstine; and superintendent of the Huron plant, Porter Wallace.

## R.F.C. Quarry Loan

T. J. QUINN AND SON CONSTRUCTION Co. will resume quarry operations at Ashton, R. I., according to Edward Ryan, superintendent. A loan of \$78,000 was obtained from the Reconstruction Finance Corporation to re-equip the plant.

## Missouri Celebration

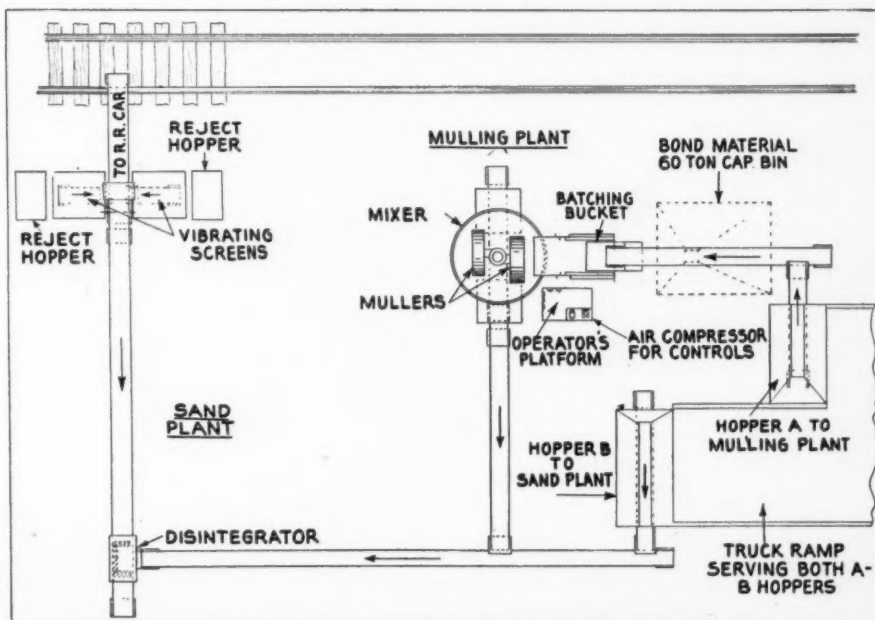
MISSOURI SCHOOL OF MINES AND METALLURGY, Rolla, Mo., recently commemorated its 75th anniversary with an academic convocation. Very important contributions to progress in the industrial minerals field have been made at this school.

## Start Agstone Plant

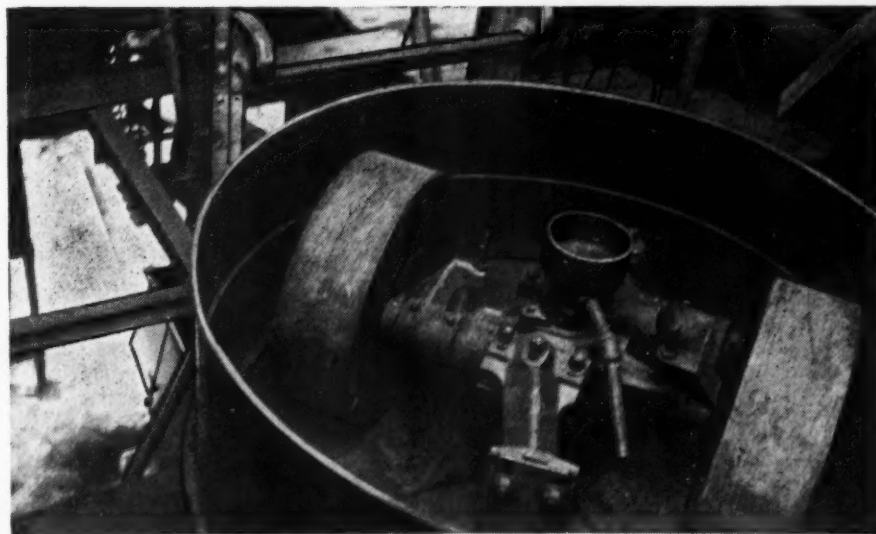
FRANKLIN GROOSE, who had the 1946 A.A.A. contract for agricultural limestone for Cole county has started his crushing plant near Charleston, Mo.



Truck dumping into regular sand plant hopper. New mulling plant installation may be seen in the center background with belt conveyor discharging to sand plant conveyor in foreground



Plan view showing material flow through mulling plant



Intensive mixer for mulling sand and clay bonding material. Batch bucket coming up skip may be seen at the lower left



# LABOR RELATIONS TRENDS

## Snares in Incentive Wage Plans

By NATHAN C. ROCKWOOD

**T**HERE is much current interest about experience with incentive, or profit-sharing, wage plans. Both labor and management, if intelligent, probably realize that average industrial efficiency is much lower than it eventually must be if our country is to continue to prosper in competition with the rest of the world. The suspicion is strong that some union labor officials and sympathetic government bureaucrats, for ulterior purposes, do not desire our country to prosper under its present system of political economy. If that suspicion did not have some basis of fact, it is hard to understand why a responsible Federal Government official should go out of his way to disrupt the bona fide attempts of several employers to establish profit sharing for their hourly-wage employees.

In all instances that have come to our attention, F.L.S.A. Administrator Walling, who is now out of office, brought these suits with no openly expressed desire on the part of the interested employees; at least the employees were not in court. By winning a U. S. Supreme Court decision in a test case in 1945, the Administrator introduced a legal obstacle to profit-sharing plans, which assuredly has done nothing to encourage more employers to install them. Employees appear to be the real sufferers, although such legal handicaps to profit sharing do appear to please some alleged leaders of labor unions, on the supposition, probably, that anything that creates a friendly tie between employer and employee correspondingly weakens the tie between union and member.

### Involves Overtime Rate

The key case was decided by the Supreme Court in June, 1945, in *Walling v. Harnischfeger Corporation*, No. 956. Administrator Walling had uncovered a collective bargaining contract between the company and a C.I.O. union of its employees, by which a considerable number of the employees were to share an "incentive bonus," in addition to their basic hourly wage rate. The amount of the bonus was determined by time studies of piece work, and the basic hourly rate thus established on a fair standard; then as an employee exceeded this piece-work standard, he was awarded his proportionate part of the bonus. The exact method was to put a "job price" based on a standard earning rate, on each operation. If this job price exceeded the regular hourly rate, determined as described, the employee eventually received the difference. About 98.5 per cent of the workers had sufficient am-

bition, efficiency and speed to earn the extra compensation.

The F.L.S.A. Administrator brought suit in the Federal District Court on the ground that the company was in violation of the Act, Section 7(a), by not including these variable bonus payments in computing over-time rates, instead of paying over-time at the agreed upon one-and-one-half times the regular basic hourly rate. The Administrator won his case in the District Court, but the decision was reversed in the U. S. Circuit Court of Appeals, and was then carried by the Government Administrator to the U. S. Supreme Court, which reversed the Circuit Court of Appeals and affirmed the decision of the District Court. Chief Justice Stone and Justice Roberts dissented from the majority decision.

The details of the plan were amply covered in a bona fide union contract, which apparently was understood by and satisfactory to both parties. The Supreme Court said, however, "our attention is focused upon a determination of the regular rate of compensation at which the incentive workers are employed. To discover that rate, we look not to contract nomenclature, but to the actual payments, exclusive of those paid for over-time, which the parties have agreed shall be paid during each workweek."

The substance of the decision is contained in the following quotation: "Once the parties agreed that these employees should receive such piece-work wages, those wages automatically enter into computation of the regular rate for the purposes of Section 7(a) (of the N.L.R.A.) regardless of any contract provision to the contrary. Moreover, where the facts do not permit it, we can not arbitrarily divide bonuses or piece-work wages into regular and over-time segments, thereby creating an artificial compliance with Section 7(a)."

### Recent Court Decisions

With the above decision as a precedent, two recent cases have been tried, and the difficulties of administering incentive wage systems thereby have been accentuated. One of these was decided by the U. S. Circuit Court of Appeals in New York on January 16, 1947, in *Walling v. Garlock Packing Co.*, No. 124. In this case Walling lost the decision in the District Court, and appealed to the higher court, for an injunction to prevent continuance of the method for computing over-time pay under the profit-sharing plan then in effect.

In this instance the incentive wage plan has been in successful operation since June, 1937 (that is, before the passage of the F.L.S.A.). Under the

plan an amount of money equal to the dividend declared on a certain number of shares of the company's common stock was set aside each quarter for payment of bonuses to workers. The number of imaginary shares on which payment was based varied from employee to employee, depending on the length of his service with the company, starting with five "shares" for six months' service, with an additional five for each additional six months up to a total of 50 "shares" for nine years' service or more. The plan was based on a 40-hour workweek, and all employees working 40 or more hours received their proportionate part of the full bonus. Employees who worked less than an average of 40 hours a week received only that part of the bonus which the proportion of hours worked bore to 40 hours. There was some elasticity to the plan in providing for sickness, etc.; and the agreement provided that the plan might be withdrawn, modified, or amended at any time by the company.

Under the plan described the company started out in 1937 with an initial quarterly dividend on these imaginary shares of 75¢ per share. Subsequently it varied with the company's earnings from 25¢ to \$1.25 per share. In the three years prior to the suit brought by the F.L.S.A. Administrator, it had not been less than 50¢ a quarter per share. The District Court dismissed Walling's petition for an injunction on the ground that under the plan the amounts paid the employees were not part of their regular rate of pay, and hence need not be considered in determining over-time rates. The Court of Appeals ruled the contrary, and the company was put under the obligation of going back to the passage of the F.L.S.A. in 1938 and paying for all over-time on the basis of a "regular rate" which included the bonus payments.

### Bonus Need Not Be Uniform

In a more recent case the U. S. Circuit Court of Appeals at Cincinnati reversed a District Court decision (*Walling v. Wall Wire Products Co.*, No. 10245) on similar arguments. This was a small concern employing something like 100 people. The collective bargaining contract provided for specified minimum hourly rates of pay for various classifications of employees, and also for distribution of 25 per cent of the company's profits after deduction of a stated amount for interest on borrowed capital. It was stipulated that profit distribution would be monthly, and in case the annual profit of the company exceeded the estimate on which the monthly payments were made, the employees would receive 25 per cent of such extra profit in addition.

In this instance the distribution was on the basis of the actual number of hours worked, straight time; over-time was not to be considered in profit-sharing, and the bonus was paid with-

(Continued on page 107)



Overall view of crushing and screening plant

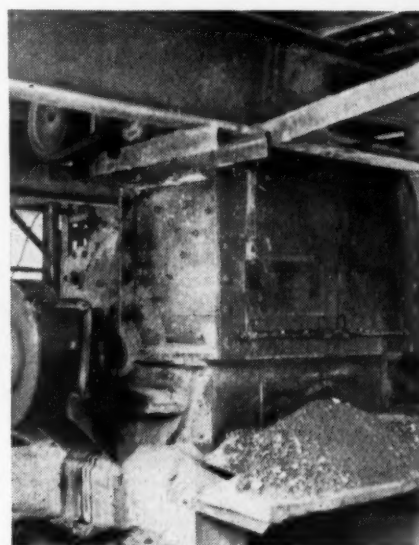
## Produce Numerous Stone Sizes With Flexible Plant Layout

**Auxvasse Stone and Gravel Co. designed for economical production of agricultural limestone and commercial stone**

**P**URCHASING an abandoned quarry site and an old plant at Auxvasse, Mo., in 1944, Samuel Krause built an entirely new plant and incorporated under the name of Auxvasse Stone and Gravel Co. All that was retained from the old plant was a crusher, a screen, and the storage bins that have been worked into the new plant arrangement. Since the inception of the new operation, production has been concentrated in agricultural limestone to serve the neighboring farms,

but screening arrangements are such that commercial aggregates can be produced in quantity when desired. Present production capacity is 450 tons of agstone and 150 tons of commercial stone daily.

The flexibility of the operation permits production of all the sizes desired. Stone, hauled by 8-cu. yd. capacity Hug trucks and dumped to a 10-ton capacity surge hopper, is conveyed by plate feeder into the primary jaw crusher. The primary crusher



Showing how agricultural limestone pulverizer is installed

product is conveyed by belt to a double-deck screen with 1½- and 1-in. sq. openings on the two decks, respectively. Plus 1½-in. stone is re-crushed and transported by a belt conveyor, joining the minus 1-in. product for succeeding screening operations. The 1- to 1½-in. stone is carried by bucket elevator to an adjacent 300-ton capacity wooden bin in the old plant for storage.

The plus 1½- and the minus 1-in. stone discharges from the belt conveyor through split discharge to a horizontal screen and to an 8-ton capacity surge bin for further processing. The screen, with 1- and ¾-in. sq. openings on the two decks, respectively, produces a finished size for chips, from ¾- to 1-in. This size is stored in a 200-ton capacity Octobin under the screen. Plus 1-in. stone is stored in a 200-ton capacity surge bin prior to further processing and the minus ¾-in. stone is delivered by belt conveyor and a bucket elevator to a 3- x 6-ft. screen for final processing into agricultural limestone.

From the 200-ton surge bin, stone is fed by an automatic feeder to a 40-in. hammermill, the recrushed product going to the bucket elevator by the same belt conveyor. The stone in the 8-ton surge bin is rescreened over a single-deck screen with ¾-in. sq. openings, oversize is recrushed in a 30-in. hammermill and minus 3/16-in. sq. stone joins the crusher throughs to the same bucket elevator.

Discharge from the bucket elevator is over a single-deck screen with 3/16-in. sq. openings, oversize returning to the 30-in. hammermill for further reduction and minus 3/16-in. material going to the agricultural limestone bin for storage. Split discharge from the screen sends the agstone into a steel bin of 70-ton capacity or into a wooden bin of 230-ton capacity. Both

(Continued on page 80)



Looking down into quarry, showing abandoned mine entrance in the background, with shovel loading steel end-dump truck





Construction view of plant showing accessibility of scrubber, screen and sand drag

## Build Gravel Plant to Meet Requirements for Ready Mixed Concrete

Diamond Washed Gravel Co. has five compartment bins below scrubber, screen, and sand drag

**R**EVERSING the present general trend of aggregate producers expanding into the ready mixed concrete field, the Diano Supply Co., Canton, Ohio, has recently completed a modern washed sand and gravel plant northeast of Canton. This leading local ready mixed concrete producer for more than the past decade acquired the 120-acre tract in virgin gravel territory close to the city limits and proceeded to have designed and constructed a completely all-steel plant incorporating all the advantages of modern operational practice. Initial operations started October 14, 1946.

### Glacial Gravel Deposit

Recoverable gravel in this deposit amounts to about 50 acres of the total 120 acres and extends to a depth of 100 ft. below the ground surface containing about 10,000,000 tons of gravel. Geologically this deposit is a valley train deposit of the Wisconsin glacial ice sheet, very close to the southern limit of its terminal moraine in Stark County. This gravel contains a minimum of silt, the sandy particles are mostly quartz, and the larger pebbles and cobbles are hard flinty, igneous and metamorphic crystalline rock. The sand and gravel physical characteristics therefore lend them-

selves very well to processing for washed sand and gravel concrete aggregate production.

### Gravel Removal

While normally deposited in practically horizontal bedding planes, the glacial valley train deposits are often terraced vertically by later erosion and lend themselves readily to extraction. This particular deposit is fairly well terraced and initial removal close to the crusher is being accomplished by merely pushing the material into the crusher hopper with an RD7 bulldozer and blade.

When the economical limits of extraction by bulldozer and blade are reached, the gravel will be moved to the crusher by a Sauerman 1½-cu. yd. slackline cableway setup. Along the borders of the workable gravel, a ½-cu. yd. General shovel is removing earth to complete the dam for the settling pond. Adjacent to the settling pond, an 850 g.p.m. pump bottoms below the gravel bed in order to reach the ground water source of water supply for the plant operation.

### Crushing

The gravel in place contains some quantities of large cobbles or boulders which either pass through the 12-in.

square openings of the grizzly or are broken up by hand sledging. Ahead of the crusher and following the reciprocating feeder, a by-pass, parallel-barred grizzly allows the minus 1½-in. material to fall directly on the main plant 24-in. conveyor belt. The 15- x 36-in. Diamond jaw crusher takes the oversize gravel and crushes it through a 2¼-in. discharge opening, discharging onto the 24-in. conveyor belt.

All the raw material from the gravel pit through the crusher and discharged onto the 24-in. main belt conveyor, is elevated 45 ft. up to the wash box. Here it is subjected to direct pressure of some 500 g.p.m. of water which serves to force it into the 40-in. diameter, 8 ft. long revolving scrubber to cleanse off the clay and produce a dirt-free product. The initial crushing lessens the abrasion wear on both belt conveyor and scrubber.

### Screening and Washing

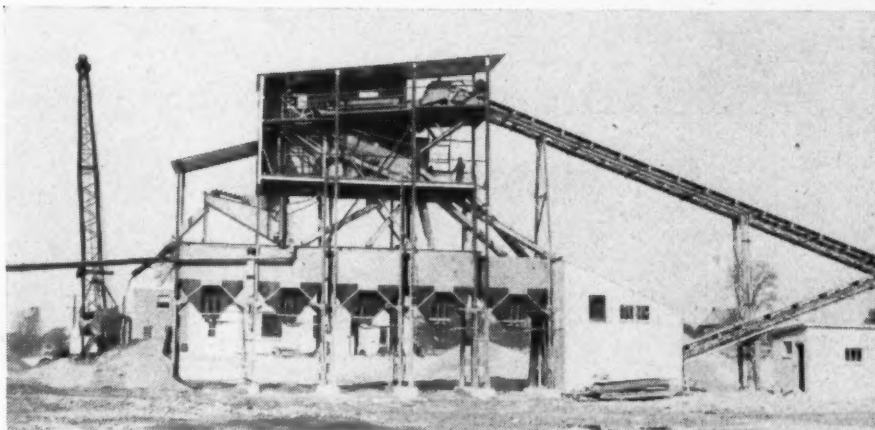
A 4- x 12-ft., 4-deck vibrating screen unit accomplishes all the finished product sizing following the scrubbing operation. The top deck 2-in. opening screen separates the oversize as rejects which are chuted to the 22-in. diameter, 40-in. long double roll

crusher for recrushing through a  $\frac{3}{4}$ -in. discharge opening and then returned to the main 24-in. belt by an intermediate 20-in. belt conveyor, completing a continuous closed circuit operation.

Material through the top 2-in. screen and over the  $1\frac{1}{2}$ -in. second screen is chuted to No. 1 bin. Under  $1\frac{1}{2}$ -in. and retained on the third screen  $\frac{3}{4}$ -in. openings goes to the No. 2 bin. The fourth, or bottom screen is divided into two screen sizes, the top end 6- x 12-ft. section, having a 4-mesh screen opening and the lower half, a  $\frac{1}{2}$ -in. screen. Over-size on the bottom screen is directed to No. 3 bin as minus  $\frac{3}{4}$ -in. to plus  $\frac{1}{2}$ -in. and through the  $\frac{1}{2}$ -in. lower screen partition goes to No. 4 bin as minus  $\frac{1}{2}$ -in. and plus 4-mesh size. All material through the 4-mesh is given further treatment as washed sand. Also an integral part of the screening operation are double lengths of water spray bars above the top and third screens. These sprays are additional insurance that all clay and sludge is removed from the gravel by water suspension and diverted as waste to the settling pond.

Sand sized material through the 4-mesh sand screen goes directly to the inclined drag washer where the remaining soft particles are carried off to the waste flume in water suspension and the final processed washed sand deposited in the No. 5 bin or chuted outside to permit it to air dry. The five storage bins are each of 25 cu. yd. capacity. A  $\frac{3}{4}$ -cu. yd. General Diesel-powered clamshell is being used to stockpile the finished material and a  $1\frac{1}{4}$ -cu yd. Osgood clamshell unit is now on order for delivery.

An operating feature of this plant worthy of note is that the Diamond Iron Works, Minneapolis, which completely equipped the all-steel plant



Main 24-in. belt conveyor inclining up to plant with intermediate belt conveyor, to the right. Note unusual arrangement of bins with two platform levels above, providing ample headroom for equipment. Drag washer for sand may be seen to the left

operation, has incorporated an interlocking electrical operating safeguard system. Each equipment unit in the plant along with the 850 g.p.m. water pump is individually electric-motor powered and all motor controls are interlocked so that a breakdown or stoppage in any individual unit automatically shuts the whole plant down. This system, of course, prevents a single unit failure from progressing to a costly major plant breakdown.

#### Additional Equipment

Present plant production capacity is 100 tons per hour based on 30 to 40 per cent finished product under  $\frac{3}{4}$ -in. size. However, the addition of a larger drag washer is contemplated to replace the present drag washer and to utilize this smaller washer to reprocess the flumed water from the larger drag washer as a plaster sand product. Probabilities are that even present equipment capacities may be increased when the operator has had

additional actual experience to define more closely the limiting factor of the degree of cleanliness required in the washing operation. The five finished sizes produced can be varied, of course, by changing the screen sizes and crusher settings. When the additional drag washer is put into operation there will be six separate finished sizes in continuous production.

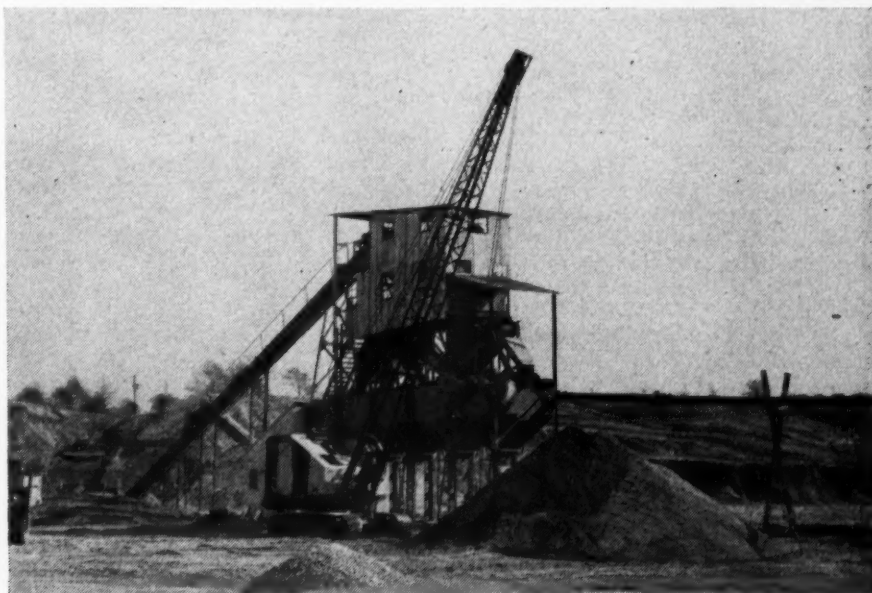
Also contemplated is the installation of a 4-compartment, 200-ton capacity Heltzel batching plant with three 50-ton aggregate bins, and a 50-ton bulk cement bin to serve four  $4\frac{1}{2}$ -cu. yd. Jaeger transit mixer trucks now on order.

The plant office, garage and repair shop building is about completed and includes a basement shower room, 6-truck capacity work shop, truck scales and weighing office and a roomy plant office space.

The gravel plant operation is incorporated as the Diamond Washed Gravel Co. as distinguished from the



"Bull-dozing" gravel into primary jaw crusher grizzly hopper



Looking toward primary crusher pit with clamshell rig in foreground stockpiling washed sand from drag washer. Flume to the right discharges waste water to settling pond



Diano Supply Co., the original ready mixed concrete plant in downtown Canton. Both companies are owned

by Anthony Diano as president, with Catherine Diano, secretary and treasurer, and E. E. Burson, office manager.

## Selection and Training for Supervisory Jobs

By D. A. GILDERSLEEVE\*

**L**ARGE industrial plants throughout the country have in recent years endeavored through training of key personnel to increase worker efficiency. Some have set up elaborate systems by which the prospective applicant for a supervisor's job is checked and double checked and numerous progress reports are submitted for scientific analysis.

In the aggregates industry there is perhaps as much need for special attention to supervisor or foreman training as in any other major industry, especially in preparing and having ready competent personnel to step into supervisory or superintendents' positions when the need arises. But the method of procedure does not need to be so highly scientific.

Ever mounting high wages have directed the attention of management to the need for closer and better supervision. Good supervision and profits are so closely related that management has good reason to be concerned about improvement in this department.

There is no immediate remedy where a scarcity of qualified supervisor personnel exists. It requires several years for the average individual to acquire only a fair working knowledge of an aggregates plant of any size.

There is no substitute for experience in supervisor training. Experience necessary to develop a competent supervisor in an aggregates producing or servicing plant should embrace some actual work around the machinery and equipment he is going to be responsible for, so that he will have a working knowledge of it.

In a business as highly specialized as aggregates production and servicing, an industry-wide program of supervisor training would naturally benefit all the participants. The reason for this is obvious and requires no elaboration.

All the modern washing, screening, weighing, loading, and handling equipment has to be properly operated and maintained and instead of lessening, has increased the need for better care and supervision. The required percentage of capable, conscientious personnel to fill the needs of the industry in this department can be found with the proper efforts. If proper tactics are adopted and carried out, young college men can be attracted to every

department of the aggregates industry to grow up in the business as they go through school. The great G. I. college training program is sure to turn out many fine young men whose talents will fit nicely into the aggregates industry.

Work in a sand and gravel producing plant is of a rugged nature, yet no other occupation is more interesting or wholesome.

Getting the fullest cooperation out of working men on the job is of course, the most important reason for proper supervisor training. A good supervisor must have tact and skill acquired only by experience. He must also be a true observer of human nature. Every individual working man differs in some respect to his fellow workmen and can best be dealt with accordingly. Working men in general today, contrary to the belief of some who think otherwise, are wiser and have a great deal more personal pride than was the case 20 years ago. Rough, hard-boiled supervision has been relegated to the past and this is as it should be. Under proper direction, working men will come nearer earning their pay than when hit or miss tactics are used.

To sum up, the fundamentals of supervisor training are:

1. To set up a system of selection whereby dead timber will not clutter up the program.

2. Make the training program as

simple as possible and appropriate to the needs of the industry.

3. See that the trainee is supplied with sufficient and correct information concerning the company and its policies.

4. Establish standards and requirements to be lived up to, which at no time, leave any doubt in the mind of any individual.

5. Make courtesy and mutual respect a tradition as well as a requirement.

6. See that proper transmission of instructions are impressed on the trainee and carried out in his presence.

7. Use mistakes the trainee is sure to make as examples of how to improve himself.

8. Never use a trainee to spy and report on others.

9. Avoid making a lot of plush lined promises to the trainee.

10. If compensation is on a monthly salary basis, make the pay fit the responsibilities involved.

### Lightweight Aggregate Plant for Louisiana

LOUISIANA LIGHTWEIGHT AGGREGATES, INC., Alexandria, La., has been incorporated with O. R. Stephens as president. Work will soon start on a \$100,000 plant.

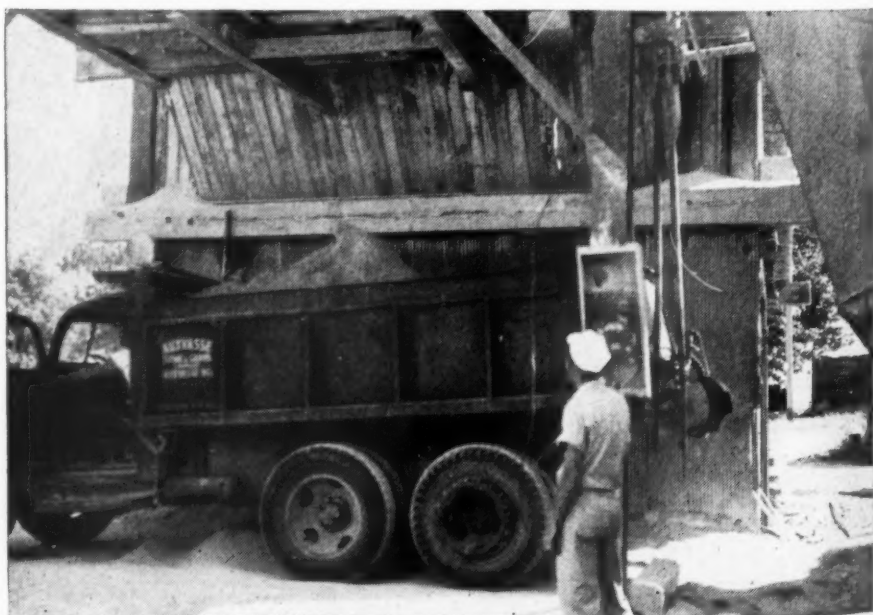
### Agstone Deliveries

(Continued from page 77)

have bottom discharge for truck loading.

Delivery of commercial stone is made by two 8-ton Ford trucks and agstone is delivered and spread by a fleet of 10 Highway Equipment Co. spreaders mounted on Fords and Studebakers.

Samuel Krause is president of the Auxvasse Stone and Gravel Co., and A. B. Hughes is superintendent.



Loading spreader trucks from overhead bins. Note levers, to the right, to operate bin gates, above

\*Supt., Pacific Coast Aggregates Co., Pleasanton, Calif.

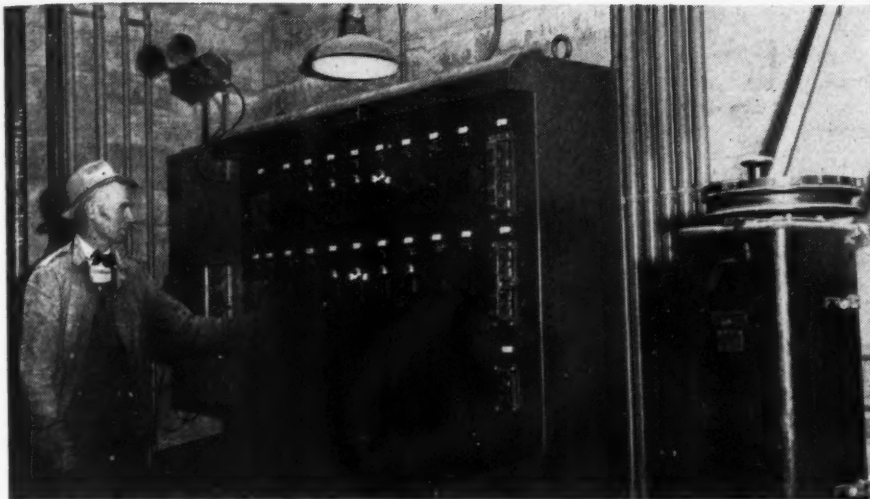


Fig. 15: Main control desk located adjacent to 48- x 60-in. jaw crusher. Mr. Purtell, chief electrician and co-designer of the system standing alongside

## Automatic Sequence Control For Stone Plant

**Granite Rock Co., Watsonville, Calif., develops unique system of controlling motors operating crushers, screens, and conveyors**

IN the new crushing plant\* of the Granite Rock Co., the electrical system incorporates fully automatic sequence control whereby all crushers, screens, and conveyors are controlled from one central location.

All motor starters and control relays are mounted in a Westinghouse dead-front "Control Center," located in a dust-proof building, adjacent to the Primary Crushing Plant. This eliminates dust from the electrical control equipment and will result in an appreciable reduction in maintenance cost. The dust tight control desk located adjacent to the jaw crusher contains all the pushbuttons and selector switches for the plant operation. It is actually the heart of the operating system.

In designing an automatic sequence control system for the conveyors, it was necessary to consider several factors: First, it was necessary to design the conveyors so that different types and different sizes of material could be delivered at different points in the plant. Second, it was necessary to design the electrical system so that the conveyors could all be started by one pushbutton; the conveyors, in turn, starting in their proper sequence with fixed time delays at certain points in the chain so that there would be no pile-up of material. Third, it was necessary to incorporate features in the control so that any

one conveyor could be taken out of sequence at the motor location, for testing or servicing, and could be operated individually from this location. Fourth, emergency stop buttons were required at strategic locations throughout the system so that in an emergency observed by any of the plant personnel, the system could be stopped. Fifth, it was necessary to incorporate features to stop all conveyors feeding into a conveyor unit that might be stopped, due to a motor trip-out. This was also to prevent pile-up of material.

### Electrical Control Circuit

A brief description of a section of the electrical control sequence will give a better understanding of the system. The schematic drawing, Fig. 14, is a typical section of the sequence control system used. (see page 82)

Referring to the Control Diagram; naturally, it is necessary to start the last conveyor, No. "9," first, to prevent material pile-up. Following the Control Diagram, with all sequence transfer switches in the "sequence" position, closing the start button contact energizes control relay 9CR. When the coil of 9CR is energized, contacts 9CR close, energizing coil 9, which is the starter coil for the motor driving No. 9 conveyor, the last in the system. The second contact of 9CR relay also closes, and, with the aid of 9A, which has closed at the same time coil 9 was energized, the coil of relay

8CR is energized. When 8CR is energized, its contacts 8CR in the next conveyor circuit No. "8" close, permitting that conveyor to start in like manner. After the No. 8 conveyor has started and 7CR relay is energized, its contacts close energizing a timing relay indicated as 7T, which permits the next drive (a screen), circuit 7, to start after a predetermined time delay. After the screen is in operation, succeeding circuits function until the selected train of conveyors, screens, etc., are in operation.

This system is carried out for all conveyors and drives, so that a predetermined sequence is followed in starting the plant. Any conveyor can be cut in or out of the sequence by the sequence transfer switches located on the control desk, and when a particular conveyor is out of sequence, it can be operated individually with the "Manual-Off-Automatic" selector switch at the motor location for testing or repair work.

The emergency stop buttons shown at the top of the diagram, of which there are several located throughout the plant, are all in series, and depressing any one of these stop buttons opens the control circuit and shuts down the plant.

The jaw crusher is interlocked with the conveyor system, so that the conveyors normally must be in operation before the crusher can be started. In turn, the 9-ft. apron feeder is interlocked with the jaw crusher so that, under normal operations, the jaw crusher must be in operation before the pan feeder can be started.

The jaw crusher is driven by a 200-hp. wound rotor motor while the 9-ft. apron and the 42-in. pan feeders are driven by Westinghouse 4-speed induction gear motors with speed selector pushbuttons located on the control desk.

The operator standing at the control desk can easily regulate the flow of material into the crusher or 42-in. pan feeder by regulating the 9-ft. apron feeder speed. He has complete control over all conveyors and, in case of an emergency stop, can tell which conveyor was stopped by red indicating lights on the desk.

The sequence control is capable of meeting all the plant operating conditions, required in the operation of the various motor groups, or motor trains, as such, or individually. Motors may be operated individually from their individual pushbutton stations located at the motor location when the motor is taken out of sequence. When the motors are in sequence, or the conveyors are operating in sequence, the control system is designed in such a manner that, should any individual thermal overload relay on any particular motor trip out, due to the motor becoming overloaded, all motors driving equipment supplying rock to the unit affected will stop. The conveyors removing material from the disabled unit will continue to operate.

\*Completing article by Royal E. Fowle in Rock Products, April, 1947.



### Automatic Operation

The installation is "Nofuze" throughout, all circuits being protected by type AB De-Ion circuit breakers. All motors, with the exception of the 200-hp. crusher drive are across-the-line starting and all have performed satisfactorily in starting under overload conditions with a max-

Adequate electrical capacity has been incorporated into the system so that load growth due to future expansion can be handled most economically.

## Gypsum Industry Expanding in the West

IN the West and particularly along the Pacific Coast, the gypsum industry is expanding and making a serious effort to keep up with the needs of the builders. At Long Beach, Calif.,

Further south the United States Gypsum Co., at Plaster City, Calif., is building a wallboard plant. This company also operates a plant at Midlands, Calif. At Phoenix, Arizona, the Union Plaster Co., has built a new calcining and sacking plant. The National Gypsum Co., Buffalo, N. Y., is reported to be planning a move into the West, and has had options on deposits in the Las Vegas, Nev., and Plaster City, Calif., areas and has done some diamond drilling.

In the Northwest one company has purchased the old gypsum quarries in Alaska that were operated years ago and expect to build a calcining plant in either Oregon or Washington. In Utah, the Western Gypsum Co., is reported to be rebuilding the plant taken over from the American Keene's Cement and Plaster Co. at Sigurd. The Minerals Material Co., Alhambra, Calif., is supplying crude gypsum to the cement trade from its Southern Nevada deposits.

In the Mojave area, Gypsum, Inc., Rosemond, Calif., has been carrying out extensive experiments involving the use of Raymond mills for calcining gypsum while it is being ground. The final product is to be used for the hardwall business. This company also is reported to be planning a wall-board plant.

## Gypsum Plant Strike Ends

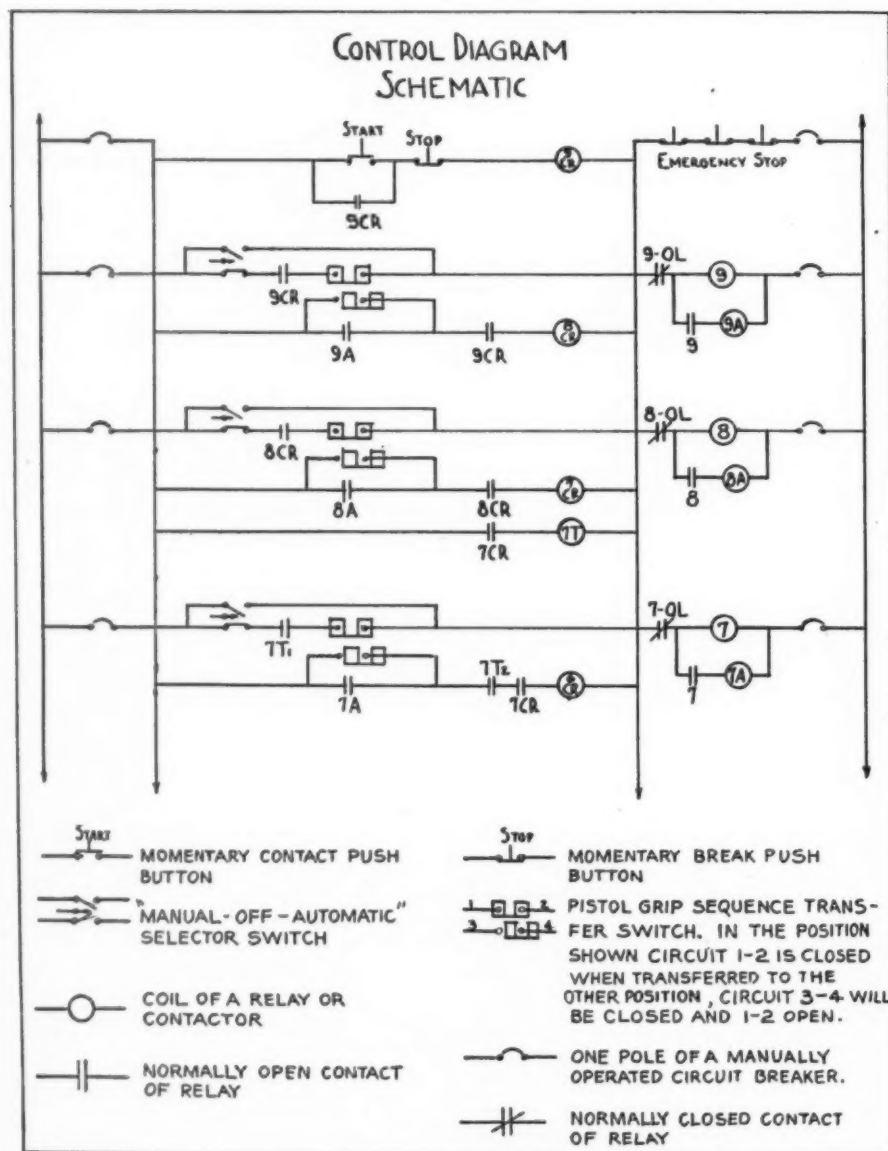
AFTER 11 WEEKS the strike against United States Gypsum Co. plant in Hammond, Ind., has been settled. The C.I.O. United Gas, Coke and Chemical Workers accepted a wage boost of 16½ cents over their basic rate of \$1.05 per hour. U. S. Gypsum had been unable to deliver contracted wallboard to construction projects during the three month stoppage.

### Add to Gypsum Fleet

PANAMA GYPSUM Co., a subsidiary of the United States Gypsum Co., has announced the launching of the Gypsum Prince at Kearny, N. J. by the Federal Shipbuilding and Drydock Co. The 441-ft. vessel has a deadweight tonnage of 10,350, and a total capacity of 330,000 cu. ft.

## Start Crushing Plant

ELKINS LIMESTONE Co., Elkins, W. Va., has started operations near this community. Production is about 600 tons per day.



**Fig. 14: Schematic control diagram of electrical system for primary crushing and screening plant. All contacts are shown in their de-energized position. In the diagram the coil and contacts are not necessarily shown together**

## Efficient Methods of Manufacturing Chemical Lime

First article of a series from a paper presented at the annual convention of the National Lime Association

By VICTOR J. AZBE\*

**A**NCIENT KILNS made good lime inefficiently. Most modern kilns make lime efficiently, but lacking in desirable qualities. There have been struggles to overcome this, but only partly effectual. Something definite was lacking, the art of lime burning was not yet solved and one wondered if it ever would be completely solved, thousands of years of manufacturing has elapsed, the modern age has arrived, the machine age, and everything was speeded up, but the product itself suffered. No one would have been more disgusted with our lime than Leonardo da Vinci looking for suitable base for his famous fresco "The Last Supper."

Of course we do make some good lime, but much of it at an operating expense which is not permissible in these days of speed and competition.

### Chemical Lime

It is assumed that "chemical lime" should perform effectively in the particular chemical process in which it is utilized. By "effectively" is meant high availability and reactivity with little process waste and little time lost. On the whole it is, of course, process availability which counts for most, not availability revealed by laboratory tests of ideal conditions.

Since chemical processes utilizing lime differ greatly, one lime may be fully suitable to one and not at all to the other. For example, a carbide furnace will accept any kind of calcium lime of desirable degree of purity and size "effectively" regardless of degree of burn, while this is not at all the case in other processes particularly where milk of lime or dry hydrate is used.

Of these processes some are more critical than others, and one of the most, as an example, is the manufacture of chlorinated lime. In this the final product, its quality as well as its cost, are dependent on a long series of factors acting independently or in combination with each other but all tending toward lowering the effectiveness of the process as a whole.

This starts with the stone, its purity, that is, amount of  $\text{CaCO}_3$  which

may be present and amount of impurities. However, this is not all of this phase of the problem; a very important extension is what are the impurities, since some are more harmful than others, and beyond that, what is their dissemination. If the impurities are localized, even though minutely so, it is far less harmful than if they are completely disseminated.

Following this in importance is the burning process. It may be bluntly stated that no system of burning practiced today is conducive to the production of high quality chemical lime. No vertical or rotary kiln is capable of giving a lime which is uniform in its characteristics throughout the mass. Although lime, it will be lime of different reactivity and varied availability because different temperatures were applied to different portions which would cause differences in the manner the impurities would exert themselves in their deleterious effect upon the mass.

After the lime is burned it is cooled, and in this cooling process if there is any core, and ordinarily there is, the impairment may be as great or even greater than in the calcining process. The most pure limestone burned by the best possible methods may be greatly harmed through recarbonation in cooling. Chances are that much of the granular reject material, containing unavailable inaccessible  $\text{CaO}$  has its origin in the cooling portion of the kiln.

After the lime is made there may be pre-hydration during shipment and such hydration combined with some recarbonization, slight as it may be, tends to deactivate the lime. The amount of this harmful action is problematical; it depends on conditions of use for example, but in any case it is a factor of impairment.

Then finally there is the matter of hydration. If it is wet hydration accomplished hot; that is, hydration direct to a milk of lime state, if the lime to begin was prepared right, then presumably the state of particle will be the smallest, the most irregular, the most dispersed, of greatest surface, and highest reactive ability.

If lime is hydrated to powder with a minimum of water permitting a dry

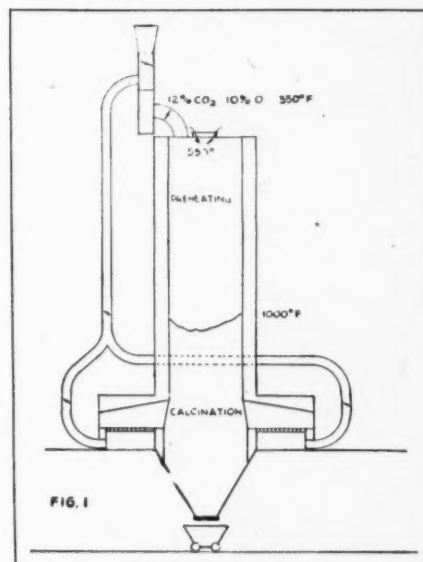


Fig. 1: "Eldred" system of kiln gas recirculation

product, then anything can occur, and the best made lime may make the worst hydrate, of heavy coarse granular structure and low surface area, portions of it probably even too heavy for the air separator to lift. Thus, while it is not generally accepted, still for best results the hydrating process needs to be to an extent fitted to the calcining process, and either the better or the worse the calcination from the median line the more critical is the process of hydration.

### Calcining Temperature Control

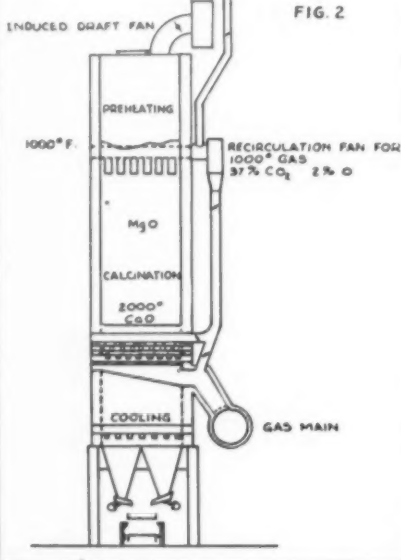
That the lime is poor, basically, is the fault of too high a temperature, too long exposure, non-uniformity of the size of the solid and non-uniformity of the flow of gas up and of material down. In a few words, it can be summed up as "High Temperature and Poor Distribution." So simple, yet why did we not control the temperature and why not the distribution? We tried, and many have tried, but these trials were largely nothing but stabs in the dark and completely ineffectual. Something was accomplished, but that something was insufficient, because the effort made was inadequate and in no manner commensurate with magnitude of the problem at hand.

If we only could appreciate what lime is, the most delicate lace is as nothing to its exquisite cellular structure. Unfortunately the waters where the limestone was forming contained certain impurities, as waters do today, and they were deposited with this limestone in an extent impairing its final quality as lime.

This impairment, however, is relative. You give the lime one sort of treatment, say a high temperature treatment, and it will be poor; under another treatment, in spite of the impurities if they are not excessive,

\*Azbe Corporation.





**Fig. 2: System of hot zone recirculation (Azbe)**

still fairly good. The fluxing silica slag and the iron, particularly if the latter is ferrous iron, will tend under high temperatures to produce a lime which will ring to the hammer, rather than the most incomparable exquisite cellular structure of the entire physical world.

When the limestone goes into the kiln, it almost all goes in as a random mixture, some that is 10 in. in size and likely more, some that is only 2 in., which requires only one fifth or less of calcination time. It goes into the rotary also in a too great range of sizes most frequently.

Definitely, the desired calcination temperature is 2000 deg. F. and lower, except that the lime is exceedingly pure; the greater the impurities the lower the temperature. But let's analyze what actually happens, let's assume a modern kiln, which only is practical from the competitive angle in these days.

The plant is producer-gas fired, with part of the combustion air, about 40 per cent, entering the producer to gasify the coke from the coal. The other 60 per cent enters the cooler and passes upward through increasingly hot lime, cooling same while preheating itself. The higher it passes the hotter it is, then at the upper portion of the cooler it comes in contact with lime recently drawn, which is likely at a temperature of 2500 deg. F., and which confers on the air a temperature at times as high as 2000 deg. F.

Gas from the producer arrives in the kiln at a temperature of about 1400 deg. F. Then this 1400 deg. F. gas and 2000 deg. F. air meet and combustion starts in the region composed of incandescent lime and small voids. The lime at this point is mostly lime, with but little core and therefore of very low and very slow heat-absorb-

ing capacity. The small voids tend to promote intimate mixing and a rapid combustion rate. Of all combustion chambers, the vertical kiln has the most perfect; it is so completely baffled, lending itself to rapid and perfect combustion, even without excess air, and therefore development of the highest possible temperatures.

There are high temperatures with a hot, rich gas, highly preheated air, perfect mixing, temperatures of 3000 deg. F. on occasions. Everything softens at such temperatures even the highly refractory brick softens and often runs. The lime softens and squashes and shrinks so that on drawing instead of weighing about half due to its loss of  $\text{CO}_2$ , it may weigh more than the original stone, and of course on this account the cellular structure is mostly gone.

That is what is done when dolomite or magnesite is clinkered for refractory purposes, and there as here, impurities play the same part, help the sintering action except that we here do not want it, but cannot avoid it, under these conditions.

If in such a kiln, stone is uniform and if the temperature is high as it might be, and uniform throughout the hottest zone, matters would not be so serious, as then one would just increase the draw and give the lime a lower hot zone exposure for a higher capacity. Unfortunately conditions are not uniform, the small pieces of lime have to be retained until calcination of the large is complete, which can be corrected only by better but more costly stone sorting. However, what is still worse is that temperature is not uniform through the hot zone. Due to unequal distribution of incoming gas and upcoming air a difference of as much as 1000 deg. F. may readily prevail, and a 10-in. lump of lime coming down the low temperature channel will be mostly core, while the same sized lump from the hot section will be burned but with a crust and the small piece from this latter zone would be practically clinkered. The only really good lime would be that of the small pieces from the low temperature region.

Some of this can be helped by trimming, therefore it is important that the kiln be strategically arranged for this operation. Then the kiln man can try to advance the hot sections and hold back the cool. But that puts too much reliance on the kiln man who can help only in small part.

The suggestion would be to control the temperatures, not allow them to get too hot. But this, while it may seem simple to most, to the Combustion Engineer who knows really something about it, is really aggravatingly complex and for that reason the solution has been so long forthcoming.

Without thinking, one would say reduce the amount of combustible, fire loss, but the fact of the matter is

flame of an ordinary match is approximately as hot as the flame of a log, hotter in fact as air has a more ready access. Then besides, just reducing the flame makes distribution worse and what we need is both temperature control and heat distribution.

Temperature control was practiced, however, when wood was the fuel. Lime then was often better because wood had such a high water content which had a diluting action. Wood also tended to burn with a long delayed burning flame, tending to incomplete combustion.

With other fuels, steam often would be injected, or the burning was with a large amount of excess air, or with insufficient air, or lime was drawn deliberately containing still considerable core, but all these procedures were faulty. For one distribution still remained imperfect and the methods, all of them were so wasteful in fuel, that utilized in the desirable degree, lime was costly indeed and while it was better, it still was not so good.

Then the Eldred system was developed, the idea being to recirculate kiln gases from the kiln top. The system helped, but again as the gases were cool, only a small amount could be recirculated without excessively harming kiln performance.

We must realize that a kiln is not just one single unit; there are three distinctly different functions. The cooler cools the lime and heats the air, the preheater cools the gases and preheats the stone, in between these is the kiln proper, the calcining zone.

Fig. 1 shows this graphically and also presents the Eldred process. It is intended to represent the dolomitic kiln. In case of high calcium kilns, conditions are some different; amount, proportions, temperatures, but in general the principle is the same.

It will be noted that the top temperature is about 550 deg. F. in the kiln, but that the gases withdrawn are heavily diluted with air so that the recirculating gases are only at a temperature of approximately 350 deg. F., containing a rather large amount of leakage air, which has entered in through the charging door.

It will be further noted that in this particular kiln the division temperature which determines where the calcining zone stops and preheating zone begins is 1000 deg. F. It is plain that everything introduced into this zone below the division temperature will leave it heated up to it. Anything therefore introduced at 350 deg. F., will leave the lime making zone at a 1000 deg. F. This is harmful, but if heat so abstracted could be made use of in the preheating zone it would not be harmful but the preheating zone under any conditions obtains more heat than it can utilize anyway, therefore anything additional is wasted.

Then the Eldred system gases contain air, and air tends to give a short

flame. With the  $\text{CO}_2$  of the stream we strive for a long flame, which, with the oxygen of the stream, is defeated in part.

Further air introduced with the recirculating gas may displace air introduced coming up the cooler and that is serious, because then lime is not cooled and kiln efficiency becomes quite harmfully affected.

From an understanding of all this, a new system was developed that finally seems both theoretically and practically sound, the "Azbe System of Hot Zone Recirculation." It has been installed on many kilns with increasing perfection and was found in every case most desirable.

While this system acts in a manner, as if a cooling agent, say water, would be poured into a too hot frying pan, it acts more as if the too hot and too cold in the pan were just mixed up and in that way temperature leveled out.

Technically one would say the system is "Isothermal." As shown in Fig. 2 the gases are withdrawn from the end of the calcining zone, where temperature is relatively lower and reintroduced at the head where it is too high. Rather than have peak temperatures of the calcining zone hottest section approaching 3000 deg. F., they are only about 2000 deg. F. and still no cooling element was introduced into the zone, no useful lime making heat wasted from it, and the introduction is of inert gases not of an air diluted stream.

With this system, however, one does not accomplish much with half way measures. For its functioning, a special recirculating fan is necessary. If

this fan is small the amount of the highly rarified 1000 deg. F. gas recirculated would be so small that the full possible beneficial effects would not become apparent. One needs heavy recirculation, which requires a fair sized fan operating at high blade speed.

Fig. 3 presents a gas flow diagram of a dolomitic kiln. It is based on volumes at the particular temperatures of the particular zone. The heavy shaded doughnut is the recirculating stream which does the tempering. At the point of withdrawal from the kiln it will be noted that it is almost as large in extent due to its temperature as is the gas stream which is being withdrawn at the kiln top.

Why the recirculating stream needs to be so substantial is not only for reasons of temperature control but for the purposes of forced distribution as well; a kiln which will be about as hot at one point as another, a kiln which will not spill core into the cooler through some chronically cool section.

Arrangements now can be such that there is control over combustible gas, gas apportionment over temperature and general gas flow distribution. The day of cold wall and corners has definitely passed, of softening and running brick, of ugly lime and excessive core. The lime kiln finally becomes a controllable chemical apparatus rather than something one could never be quite sure of.

Under this system beneficial results are obtained in unexpected ways. For example, in spite of the heavy additional flow through the hot zone, draft required is but little more, because

forceful distribution of combustible causes the air passing up the previously cool corners to work. Under this system combustion is complete with no trace of  $\text{CO}$ , with hardly any excess air and actually the escaping gases are less in weight and on this account alone, efficiency of the kiln is higher.

One would imagine that lowering the hot zone temperature would reduce the heat transfer rate and so reduce kiln capacity, but this is offset by better distribution as mentioned above, making all sections of the kiln work. It is also offset by the increased flow rate which enhances the heat transfer and it is offset by increasing the calcining zone, making lime higher up the kiln. Heretofore on most kilns the mid-section was idle; down low, lime was made; up high the stone was preheated; and in between, nothing happened, as temperatures of stone and gas were in equilibrium and below the calcining point.

There is a new era of lime burning in the offing. Not only will we get lime as we want it, if stone is at all consistent, but forced distribution will make the spall kiln practicable for burning stone as small as  $\frac{3}{4}$  in. in vertical kilns. It will also make mechanical drawing possible and that means construction of fully automatic kilns. The days of difficult trimming and punching over a hot fire are just about gone and of sorting and coring the lime as well.

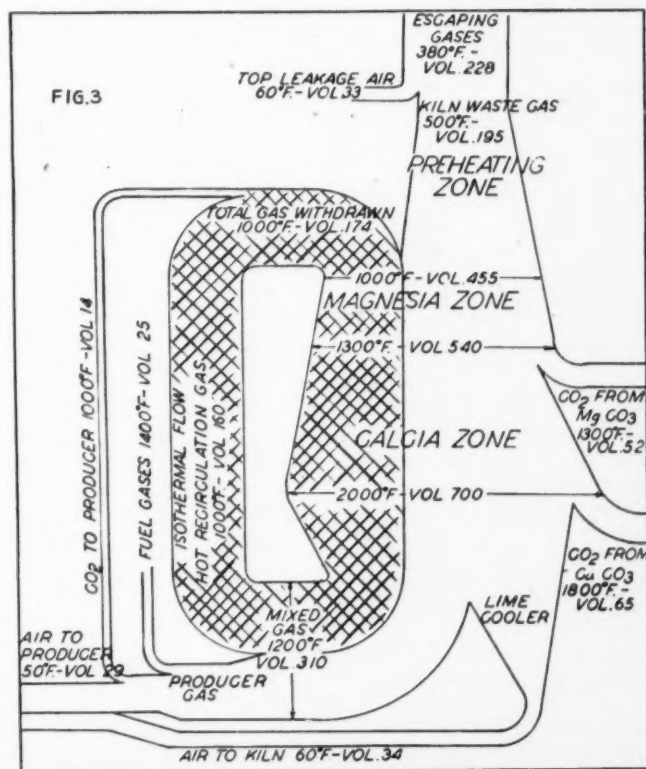
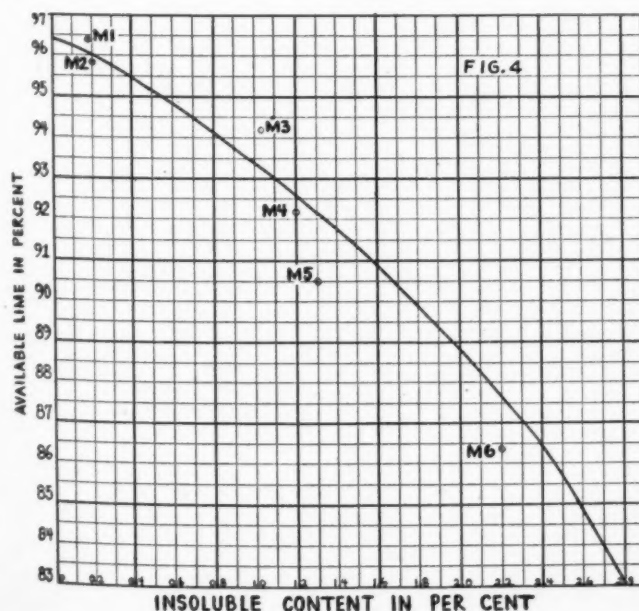
### Effect of Impurities

In respect to extraneous matter such as alumina and silica in lime, we could not well call them impurities

(Continued on page 104)

Fig. 3: Gas Flow diagram (relative volumes) of Azbe hot zone recirculation system for calcination temperature control in a dolomitic lime kiln

Fig. 4: Relation of availability to insoluble content of high calcium lime





# MOISTURE CONTROL of Portland Cement Raw Mix Slurry

ONE REQUIREMENT for economical wet process cement kiln operation is that there be an optimum moisture content established for the slurry and that the variation from this value be held at a minimum. The benefits derived, in terms of fuel and refractory cost, are often considerable although they may not be easily isolated in cases in which the chemical composition of the raw mix varies considerably or other factors are existent that obscure the advantages.

Kilns that have lengthy chain sections often require a slurry of fixed consistency to enable the material to move uniformly from feed end to burning zone. Although consistency and moisture content are not necessarily closely related in cases involving variable raw mix fineness and variable materials of which the raw mix is composed, there are operations in which it is advantageous to be able to maintain the slurry moisture content at any desired value.

A brief description of one method of controlling the moisture content of cement slurry follows:

The means of securing the desired water content is to meter water into blends of known moisture content slurry, the slurry being ground originally with a moisture content slightly less than the optimum value. The difference should be as small as possible in order not to reduce grinding effi-

By C. J. KNICKERBOCKER

ciency (in some cases) and to limit the water addition and subsequent blending time required.

The following calculations are based upon the use of gallons of water and of slurry—for convenience in using the conventional water meter. The derivation of basic equations is eliminated since they are generally known. Let  $L$  = % water content by weight of slurry.

$$L_1 = \% \text{ water by volume} = GL / (S + GL) \text{ or } (100 - S_1)$$

$$S = \% \text{ solids by weight} = (100 - L)$$

$$S_1 = \% \text{ solids by volume} = S / (G + GL) \text{ or } (100 - L_1)$$

$$G = \text{Specific gravity of solids} = 2.65$$

$$I = \text{Inches of slurry to be corrected @ 96 gal./in.}$$

$$X = \text{Gallons of water required for correction}$$

$$\% \text{ water by volume of original slurry} = L_1 = 2.65L / (1 + 1.65L)$$

$$\% \text{ water by volume of corrected slurry} = L_2 = 2.65L / (1 + 1.65L)$$

$$\text{Water correction in gallons} = X = ((96I(L_2 - L_1)) / (100 - L_2))$$

Example of solution by calculation:

To correct 330 inches (31680 gal.) of 34.2% moisture-content slurry to 35.0% moisture.

$$L @ 34.2 = L_1 @ 57.95 \text{ and } L @ 35.0 = L_2 @ 58.80$$

$$L_2 - L_1 = 0.85 \text{ and } 100 - L_2 = 41.20$$

$$X = (96 \times 330 \times 0.85) / 41.2 = 653 \text{ gal.}$$

Check solution:

$$31680 \times 0.5795 = 18358 \text{ gal. water in original slurry}$$

$$(18358 + X) / (31680 + X) = 0.588$$

$$X = 655 \text{ gal.}$$

Graphical solution of above example:

Enter network chart at bottom at 34.2; move vertically to curve; move horizontally left to  $L_1$ ; read 57.95 and record.

Enter chart again, at 35.0; move vertically to curve; (1) move horizontally left to  $L_2$ ; read 58.8 and record; (2) move horizontally right to  $(100 - L_2)$ ; read 41.2 and record.

Align 330 on slurry volume scale with 0.85 on  $(L_2 - L_1)$  scale and hold point of intersection with reference line (R); align point on (R) with 41.2 on  $(100 - L_2)$  scale; read 650 gal. on diagonal scale.

The slurry volume scale may be utilized in any operation by converting the slurry volume to a gallonage

basis, determining the proper location of the starting point on the scale (or

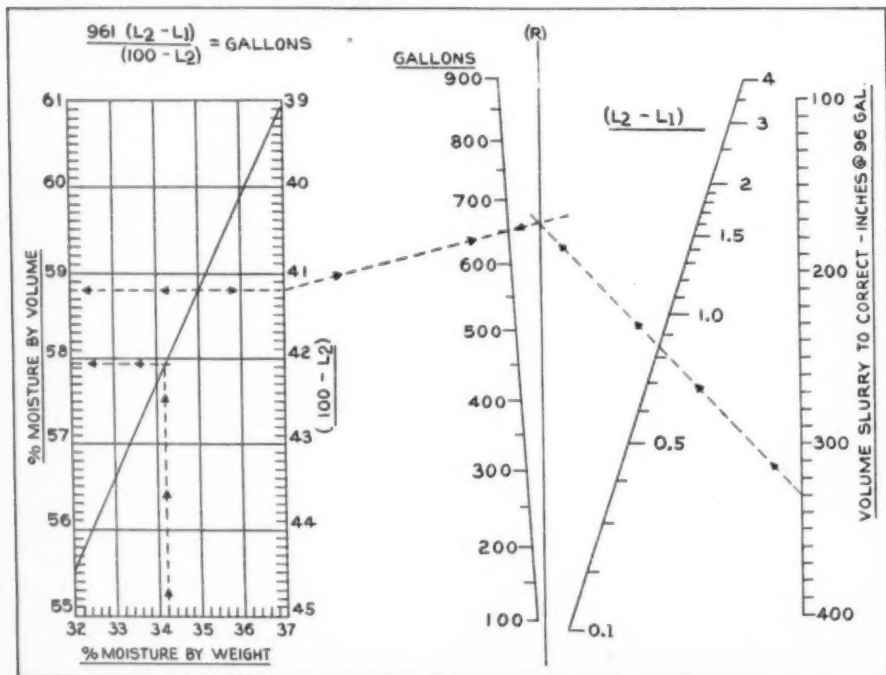
fractional part if required) and proceeding as outlined above.

## Rapid Method

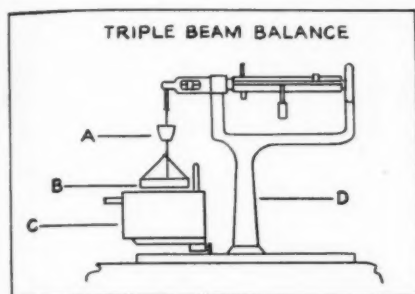
Another rapid method for determining cement raw mix slurry moisture content is advantageous in certain raw grinding operations. A modified specific gravity test, here described, will afford a relatively accurate test value in much less time than that required by the drying method commonly employed.

An inexpensive triple beam balance is well suited for the weighing and requires but few modifications. As illustrated, the stirrup and pan of the balance are replaced by a counterweight that is equivalent to the difference in weight of the original stirrup and pan assembly and of the sample pan used in the determinations. A constant water level container that may be raised to a fixed height is readily made.

Sample weights of 50 or 100 grams may be used, the 50-gram sample being more convenient to handle but allowing less accurate test values. The slurry must be placed in the pan in a manner such that air is not entrapped and the sample must be immersed



Left: Chart to determine moisture by volume. Right: Slurry volume scale



Triple beam balance; (A) counterbalance, (B) sample pan, (C) constant level water container, (D) triple beam balance

with care sufficient to prevent agitation of the bed of slurry. No advantage has been realized from covering the slurry with oil (kerosene, etc.) before immersion.

It is advisable to construct a solution curve from data obtained by determining moistures in the conventional and in the described manner, using slurries that cover the range of moisture contents required.

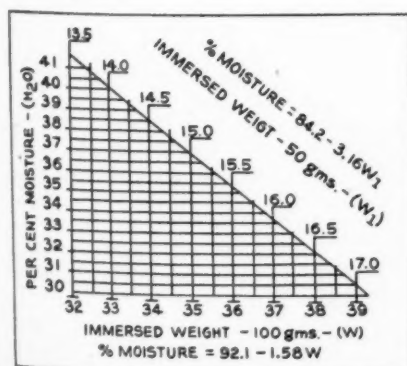
Sample pan displacement, air entrainment and variation in the specific gravity of the dry solids, will alter solution chart values from those illustrated.

The time required to perform a test is less than three minutes and a sufficiently large solution graph will allow values being read to one-tenth of one per cent. Test values by the rapid method are normally within 0.1 per cent of those secured by drying tests.

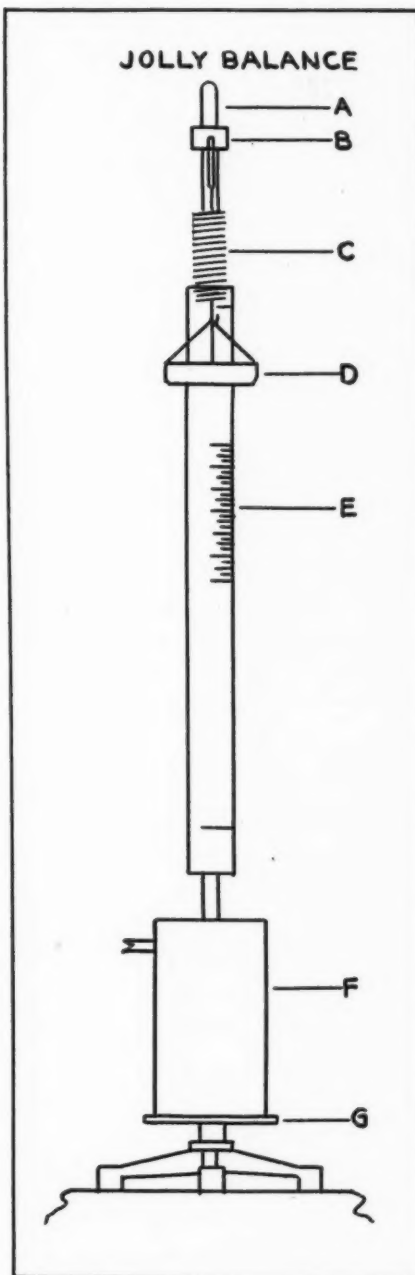
An alternate means for determining the moisture content by the apparent gravity method is through use of a Jolly balance, a suitable spring, revised scale and altered water container support being the major modifications required.

A theoretical curve may be plotted if desired but verification should be made by means of drying tests. The following equations may be utilized for such a purpose:

Given,  
 $G$  = Sp. G. solids (gm/ml)  
 $W$  = immersed wt. of 100 gms. slurry  
 $M$  = % moisture by weight  
 $p$  = pan displacement in grams  
 $W_t$  = weight of slurry in air (100 gms.)



Sample solution to determine moisture values



Jolly balance; (A) support rod, (B) spring clamp, (C) spring, (D) sample pan, (E) scale, (F) water container, and (G) shelf

$W_1$  = immersed wt. of 50 gms. slurry  
 Sp. G. slurry =  $W_t / (W_t - (W + p))$   
 Sp. G. solids =  $(W_t - M) / ((W_t - (W + p)) - M)$   
 (Using 100 gm. sample);

$$M = \frac{100 - G(100 - W - p)}{1 - G}$$

(Using 50 gm. sample);

$$M = \frac{100 - G(100 - 2W_1) + 2pG}{1 - G}$$

(Note) Substitute  $2W_1 + p$  for  $W$

### Start Quarry

BRAMHALL Co., Carrollton, Mo., is planning to operate a quarry on the Henry Cook farm west of King City, Mo.

## Spectrographic Analysis Of Portland Cement

INCREASED KNOWLEDGE concerning effects of several constituents of cement (particularly minor elements) with their favorable or unfavorable action in the finished concrete, has led to much research in order to find a more rapid and precise method for determining their presence. An investigation carried on by the research fellowship of the Portland Cement Association at the National Bureau of Standards, in cooperation with the bureau's Spectroscopy Laboratory, has developed a spectrographic method for determination of the elements in cement.

The new spectrographic method has two chief advantages: speed and freedom from human error. With the spectrographic method eight cement samples in duplicate for seven elements can be analyzed in eight hours—a total of 112 determinations, which by the chemical method would take several days.

Exciting characteristic spectra of the elements in the sample is the chief problem in spectrographic analysis. This is accomplished by forming a compressed pellet of the product ( $\frac{1}{2}$ -in. in diameter by  $\frac{1}{8}$ -in. thick) with a binder of graphite powder; a predetermined and controlled amount of cobalt powder as a reference material; and a buffer of potassium nitrate. A graphite rod and the pellet serve as electrodes, between which an intermittent arc discharge is passed.

The resulting light from the arc is observed by means of a spectrograph, and the spectrum photograph is measured for characteristic lines of elements to be determined. Quantitative determinations are made by comparison with standard samples having compositions carefully determined by chemical means.

Graphite serves the double purpose in the pellet of not only binding the material together, but also acting as a conductor of electricity through the electrodes. Intensities of special lines of minor elements in the sample are measured relative to the intensities of selected cobalt lines. Effects on the

spectra caused by variations in the concentrations of alkali elements in the cement being tested are overcome by the known excess of potassium nitrate.

The following constituents, which are reported as concentrations of their oxides, are determined quantitatively: aluminum, iron, magnesium, sodium, potassium, manganese and titanium. Suitable spectral lines are also listed for detection of chromium, lithium, strontium and zirconium.

This new method for cement ingredient analysis shows promise of ready acceptance in the industry.



# Industrial Sand

## Labor, Legislation, and Dust Control Discussed at Meeting

National Industrial Sand Association convention at Homestead, Hot Springs, Va., reviews car shortage, dust control, legislation, new state codes, and insurance rates

CONVENTIONS of the National Industrial Sand Association have achieved that happy medium of a well-rounded, informative program of business sessions with an interesting schedule of entertainment for both men and ladies. No better testimony as to their popularity can be offered than the increasing attendance at these meetings, the 1947 convention at the Homestead on May 14, 15 and 16 drawing 44 men and 30 ladies.

### Entertainment

To Mrs. Gregory is extended the thanks of the convention for the splendid entertainment program provided for the ladies, and E. M. Durstine arranged a golf tournament which was played under very pleasant weather conditions that prevailed during the entire meeting. A highlight of the convention was the picnic at the Cascades Wednesday evening which revealed some unexpected vocal talent. Two cocktail parties on Thursday and Friday nights also were gala occasions, particularly Thursday night when Mr. C. R. Wolf showed his interesting moving pictures of previous Hot Springs conventions of the association to a capacity audience. Mr. Wolf has very kindly offered these pictures to the association for annual showing. Each year he will take moving pictures at the convention and add the film to those taken at past conventions. J. A. Crew and Lyle Manley also demonstrated their pro-

ess with a shot gun at an impromptu Skeet Shoot on Thursday afternoon. Others sampled the baths, rode the trails and also traveled to the near-by Cascades golf course.

At the opening session PRESIDENT A. Y. GREGORY announced the recent death of JOE CABLE of the Minnesota Mining and Manufacturing Co., a director of the Association. A resolution of sympathy was sent to Mrs. Cable.

### Reelect Officers and Directors

President Gregory briefly reviewed the various activities and meetings of the Association during the year. A financial report and budget for the coming year was submitted with the recommendation of the Board that it be adopted. A. Warsaw presented the report of the Nominating Committee which submitted the names of all the officers and directors for reelection with the exception of the late J. S. Cable whose place was filled by J. S. Coxey, Jr. The officers and directors are as follows: President, A. Y. Gregory, Whitehead Bros. Co., New York, N. Y.; vice-president, Geo. A. Thornton, Ottawa Silica Co., Ottawa, Ill.; treasurer, Sterling N. Farmer, Sand Products Corporation, Cleveland, Ohio. Directors are: Hamilton Allport, Standard Silica Corporation, Chicago, Ill.; J. S. Coxey, Jr., Industrial Silica Corporation, Youngstown, Ohio; E. M. Durstine, The Keener Sand and Clay Co., Columbus, Ohio; C. M. Hardy, Houghland & Hardy, Evansville,



Sterling Farmer chatting with Geo. Pettinos, center, and Mrs. Pettinos

Ind.; W. J. Muhlitner, Great Lakes Foundry Sand Co., Detroit, Mich.; Clarence R. Wolf, New Jersey Silica Sand Co., Millville, N. J., and past-presidents, A. Warsaw, Wedron Silica Co.; Russell G. Hay, Ayers Mineral Co.; J. M. Strouss, Deckers Creek Sand Co., and T. C. Matthews, Pennsylvania Glass Sand Co.

Mr. Warsaw reported for the Committee on the Revision of the Constitution. These changes will be submitted to the membership in writing 30 days before the fall meeting at Grove Park Inn, Ashville, N. C., on October 1, 2 and 3.

### Car Supply

CALEB MAGEE, vice-chairman of the Car Service Division, Association of American Railroads, whose appearance at previous meetings has made him well-known to the association, gave a very informative address on the car supply situation. Mr. Magee expressed his appreciation for the cooperation of the Association in preparing quarterly reports on anticipated car requirements for the industry. The report for the second quarter indicated a prospective increase of 21.9 per cent or a total of 9258 cars above actual loadings of the corresponding period of 1946. Mr. Magee said that the car supply situation was more serious than during the recent war. He pointed out that the trouble really started back in 1930 when funds were insufficient to replace old with new cars. An average of only 23,000 cars annually were replaced when 100,000 annually were needed. From 1930 to 1938, new cars placed in service were less than retirements. Heavy exports of grain and other products, and greatly increased loadings of coal, ore, and building materials are aggravating the tight situation. However, Mr. Magee expected that by the end of the year there would be a decided improvement in car supply.

Considerable discussion developed over the heavy movement of empty cars to the west. It was pointed out by several members that if these cars



J. A. Crew, to the left, doesn't seem to be afraid of the ladies. To the right may be seen E. J. Campbell and in the background is C. R. Wolf at the Cascades picnic

had been loaded considerable relief would have been afforded. Mr. Magee called attention that the Interstate Commerce Commission allocation of cars for the anticipated heavy grain movement was in part responsible for this situation. He also mentioned the effect of the five-day week in unloading and loading delays. The question of bad order cars also was brought up, and Mr. Magee said that while this condition was serious there has been an improvement as the number of bad order cars had been reduced to 3 per cent.

## Dust Control

GEO. A. THORNTON presided at the Thursday morning session. He called for a report on the Abrasive Blasting Manual from MR. WARSAW, who said that this report would be ready for the October meeting. THOS. HARDY, reporting for the Foundry Sand Committee, said that his committee was in a standby status waiting for any instructions or suggestions. STANTON WALKER commented on the work of the American Founders Association Committee on Grading and Fineness standards. He said that Robert Morey of the Naval Research Laboratory on this committee had proposed a secondary test sand to the present Ottawa sand standard. The proposed standard, he said, sets very narrow grading limits. Mr. Walker said that he had voted against the grading specification because it provided for a very complicated series of tests using various types of testing sieves. Mr. Schneider of Ottawa Silica Co., said that the narrow specification limits involved considerable additional cost without adequate compensation. Mr. Walker said that a new method is proposed to replace the A.F.A. fineness standard procedure which will provide for both sieve and hydrometer analysis.

President Gregory read some correspondence which he had exchanged with L. E. Roark, executive vice president of the National Founders Association, in which Mr. Gregory protested a newspaper interview in which Mr. Roark had alleged that the foundry industry was suffering from "poor quality" of pig iron, scrap, coke and molding sand. The membership approved Mr. Gregory's action by a standing vote and it was suggested that an effort be made to have a reply challenging Mr. Roark's statement to appear in the same newspaper.

HAMILTON ALLPORT told about the new Ottawa district labor contract which maintains most of the terms of the earlier contract. Six major changes were requested and 15 changes in all were demanded, however, the principal change was an increase in the basic rate to \$1.03, up 8¢ an hour from the previous contract.

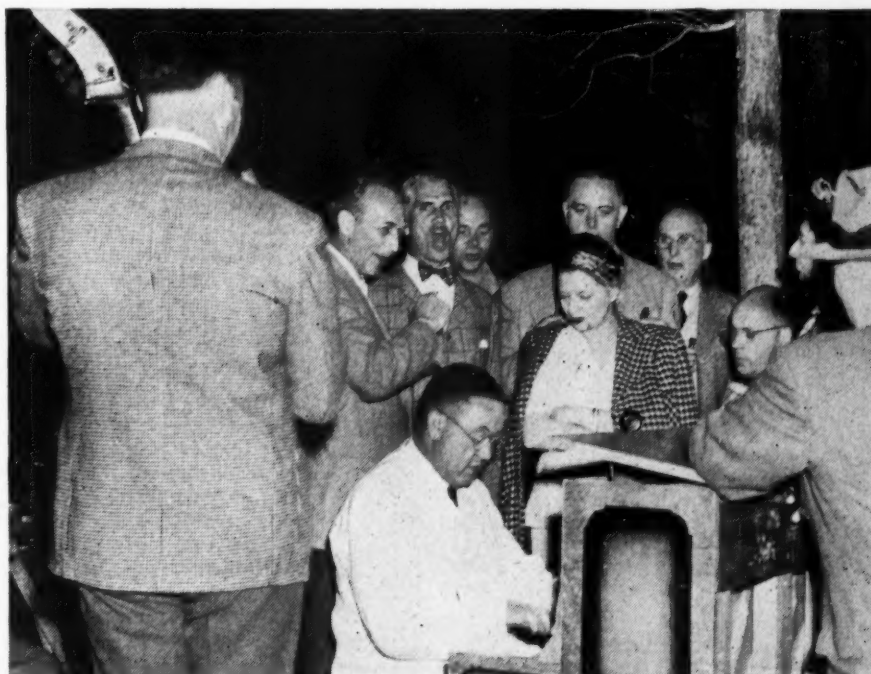
THEODORE F. HATCH of the Industrial Hygiene Foundation, co-author with Dr. Francis Holden of the report



Vince Ahearn chatting with Catherine Bryant, to the right, and the Hardy's, to the left, at the Cascades picnic



Listening to negro spirituals sung by waiters at the Cascades picnic



Some close harmony at the Cascades picnic





E. M. Durstine, off to a good start with a long drive

covering an industry-wide dust study, addressed the meeting. He summarized the provisions of the report



Geo. Thornton is not using a shillelagh; just the "whip" of the club

after which there followed a very practical discussion of the problems involved. It was voted to set up a



Norman Crissey has that professional stance



Sterling Farmer, on the first tee

Committee on Industrial Hygiene to be appointed by the president, the principal function of which would be to act as a clearing house through which all members could be kept advised of any developments at any plant that offered ways and means of reducing the dust problem.

#### Legislation-Codes Future Meetings

STERLING FARMER presided at the final session on Friday. Executive Secretary V. P. Ahearn announced that it had been decided to hold the fall meeting at the Grove Park Hotel, Asheville, N. C., on October 3, and that the 1948 annual meeting would be held at The Homestead on May 12, 13 and 14. The 1949 annual meeting also is scheduled for the Homestead on May 11, 12 and 13, and negotiations are now underway to hold the 1948 fall meeting at the Greenbrier, White Sulphur Springs, W. V.

J. J. BLOOMFIELD, assistant chief, Industrial Hygiene Division, U. S. Public Health Service, reviewed the progress being made in establishing "State Industrial Hygiene Codes." Mr. Bloomfield complimented the association for bringing out its code in 1934, and said that the job before the industry was to promote the code practice nationally. He outlined what constitutes good regulations and practices.



Bill Muhlitner takes his golf seriously

Mr. Bloomfield deplored the duplication of state authority in administering industrial hygiene codes and laws, and suggested that every State have an Industrial Hygiene division in its state government, preferably handled by the health department. He said that 35 codes have been promulgated in 29 States. Mr. Bloomfield referred to a model code law which he had helped prepare for Bolivia. There are three major parts in this code which he felt should be incorporated in all codes in this country. They provide: 1—An explanation of the purpose of the code and the authority for its administration; 2—rules showing employer and employee responsibility, environment, and personal hygiene, first-aid, emergency treatment, and periodic health examination; and 3—recommendations and interpretation of rules. He said that the main problem is to attain uniformity in State codes.

THEODORE C. WATERS, Association Counsel, presented a very complete report on State legislative enactments which directly affect the industry. He also referred to the proposed uniform industrial hygiene code. The Ohio code administration, he said, was proceeding satisfactorily, and he also referred to the New Jersey code being formulated. Mr. Waters discussed the objection of the association to the inequi-



T. E. Matthews, left, telling one of his stories at the Cascades picnic

## INDUSTRIAL SAND

table rate schedule for occupational disease compensation insurance, and it was agreed that efforts be made to have these rates reduced. A resolution was adopted to this end.

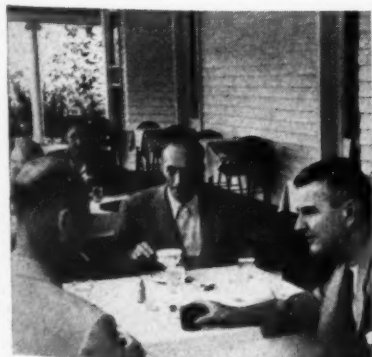
EXECUTIVE SECRETARY V. P. AHEARN reviewed the National Silicosis Conference report. He touched upon the survey made by the industry on car supply which indicated a 21.9 per cent increase in carloading over the same quarter a year ago. The problem of repairing and reconditioning cars, he pointed out, was proving to be costly and no immediate relief from the railroads may be anticipated. Mr. Ahearn also told about the association's appearance before the Interstate Commerce Commission in the recent rate case. The association voted approval for the association to represent the industry in any subsequent ex parte freight rate case that may

come up. Mr. Ahearn briefly reviewed national legislation, mentioning the passage of the Gwynne or portal-to-portal pay bill. It was proposed that information be obtained by the Association as to the methods of paying employees, such as is now being undertaken for the sand and gravel and ready mixed concrete industries. It was also suggested by Mr. Ahearn that a labor agreement study be made. Mr. Ahearn believed that some amendments would be made in the Wage-and-Hour law, including an increase in the minimum wage. He also called attention to a bill before Congress which would prohibit the acquisition of other companies, allegedly to prevent a reduction in competition. Mr. Ahearn also reviewed the results of recent labor agreements in other industries, including steel and rubber and other major industries.

### Registration

Ahearn, V. P., National Industrial Sand Association, Washington, D. C.  
Allport, Hamilton, Standard Silica Corporation, Chicago, Ill.  
Bergs, James B., Pioneer Silica Products Co., St. Louis, Mo.  
Bohon, Thomas, John N. Bos Sand Co., Chicago, Ill.  
Bos, N. C., John N. Bos Sand Co., Chicago, Ill.  
Producers Core Sand Co., Michigan City, Ind.  
Campbell, E. G., Sun Sand Co., Thayer, W. Va.  
Campbell, Harte, Sun Sand Co., Thayer, W. Va.  
Coxey, J. S., Jr., Industrial Silica Corp., Youngstown, Ohio  
Crew, J. A., Ayers Mineral Co., Zanesville, Ohio  
Crissey, N. H., Wedron Silica Co., Chicago, Ill.  
Cronenweth, Russell, Great Lakes Foundry Sand Co., Detroit, Mich.  
Daugherty, E. H., Taggart & Co., Philadelphia, Pa.  
Durstine, E. M., Kenner Sand & Clay Co., Columbus, Ohio  
Farmer, Sterling, Sand Products Corp., Cleveland, Ohio  
Gregory, A. Y., Whitehead Brothers Co., New York, New York  
Hardy, C. M., Hardy Sand Co., Evansville, Ind.  
Houghland & Hardy, Evansville, Ind.  
Hardy, Thomas H., Hardy Sand Co., Evansville, Ind.

(Continued on page 102)



Some snapshots at the Casino. Top row, left to right: Seated at the table, left, Mr. and Mrs. Sterling Farmer, Mr. and Mrs. Russell Cronenweth, and Mr. and Mrs. E. M. Durstine, and to the right, Norman Crissey, Ted Waters, and John Putnam. Center row, to the left, Mr. and Mrs. A. Warsaw; and to the right, in the background may be seen Alfred Miller and in foreground are identified, Mrs. Arthur Schlessinger, Mrs. P. W. Palmer, Mrs. Lyle Manley, and Mr. and Mrs. Hardy. Bottom row, left, Sterling Farmer, T. C. Matthews, facing camera; center, Catherine Bryant, surrounded by Messrs. Miller and Muhltner; and T. C. Matthews chatting with Geo. Thornton and Hamilton Allport, Ted Hatch with his back to the camera





Overall view of Kaolin, Inc., plant where mica is recovered as a by-product

## Fine Grinding MICA

**Both dry and wet grinding processes  
used in Spruce Pine, N. C., district. Mica  
is ground to 3000-mesh by dry-process**

**S**PRUCE PINE is the mica producing center of the United States. In addition to numerous plants that split, trim, and punch sheets, there are six plants that grind scrap mica. Of the six grinding plants, four are operated by the English Mica Co. and two by D. T. Vance at Plumtree.

Mica is both water-ground and dry-ground. Water-ground mica is produced by a batch grinding process in tubs with large wooden wheels rolling over wet mica. This action separates the laminations of the mica to a very fine degree, the edges become smooth and rounded, and the surface of the flakes are polished. The ground product is reclaimed by water flotation and the foreign materials removed by settling. The product is then dried and sized through silk screens. Water-ground mica is produced in mesh sizes of No's. 160 and 325. This product is used where a large flake is desired for sealing, non-penetration, flexibility and toughness and reinforcement of paints.

### "Micro-Mica"

The English Mica Co. also operates a dry grinding plant where a "Micro-Mica" is produced. This is made by injecting high pressure, superheated steam into a shallow, circular, grinding chamber which contains a steady flow of mica already reduced to 1/4-in. size or finer. Steam enters through

tiny jets set at an angle to whirl the mica around and cut across the rotating mica. This reduces it to a very fine flake by spinning and projecting the particles with the speed of bullets against one another. As the particles become finer, the centrifugal force no longer keeps them to the outside and they gravitate toward the center where they are collected. Micro-Mica is produced in theoretical sizes of 1000- and 3000-mesh. The 1000-mesh mica has an average particle size of 10 to 20 microns in diameter while the 3000-mesh mica has an average particle size of 5 to 10 microns in diameter. The water-ground mica can readily be distinguished from the Micro-Mica by their particle size as well as the fact that the water-ground mica has a high sheen and glistening particles, while the dry ground mica is a flat, white powder with no sheen. Micro-Mica is used where a finer particle size is desired and where not so much reinforcement is needed. A complete description of the process employed in the production of Micro-Mica appeared in the September 1941 issue of ROCK PRODUCTS, page 51.

### Wet-Grinding Mica

A typical wet-ground process is that employed at Plant No. 1 of The English Mica Co. Scrap mica from local "sheeting" operations and mined mica from Franklin, N. C., are received at

the plant, the latter in 75-lb. bags. Mica is deposited into a hopper that feeds the primary grinding machines. This plant is equipped with five such grinders. The machine consists of wooden rolls, four to each machine, 40-in. diameter and having a 20-in. face. The tub into which the mica is fed, is steel-constructed, 10-ft. diameter, and 4 ft. high, with a wood-block floor. The method of grinding is similar to the standard wet-pan process. Each roll weighs about 500-lb. and they rotate at 18 r.p.m., grinding the mica for about 8 hrs. before further processing. Each tub can accommodate 1 1/2 tons of raw product.

After primary reduction, the wetted mica receives sufficient water to float the pulp into a 2-ft. square trough, 20 ft. long, where the foreign materials such as sand and stone are allowed to settle with the larger particles of mica. The fines are carried with the water to settling tanks. After the water and fines have been drawn off, the foreign materials are wasted, and the large particles of mica that have settled are returned to the grinders. A separation is accomplished in the trough since the heavier sand and stone settles first, allowing the lighter mica to settle at the far end of the trough.

The fines that are washed with the water are received in five concrete settling tanks, each 8 x 30 ft. in size

and 2½ ft. deep. Here the pulp is allowed to settle for from 8 to 16 hrs., after which time the water is drawn off into another single settling tank to recapture any fines that have not settled out in the primary tanks. This tank is 4 x 40 ft. and 5 ft. deep, and after a period of 8 to 16 hrs. of settling, the water is drawn off and wasted into the nearby river. The mica that has settled in the tanks is shoveled into steel dump cars of 1-ton capacity, which deliver it to an agitating tank, 8 ft. square and 8 ft. deep. This tank is equipped with two 4-ft. blades that rotate at about 10 r.p.m. Water is added to the tank to create a pulp that can be handled by a hydraulic pump for delivery to drying operations. The pump, with a 3-in. intake and 2-in. discharge, can handle about 7 tons every 8 hrs.

### Drying Wet-Ground Mica

The pump delivers the pulp to a filter press consisting of two steel plates held together by 4-in. screws, and equipped with 1½-in. openings over which press cloths are secured. The force of the pump sending the pulp into these press cloths forces the water out. It falls into a tank under the filter press and is carried to waste. After the cloths are full, the filter

press is opened and the mica captured in the cloths is deposited into steel dump cars for delivery to driers. The entire process of filling the press cloths takes about 20 min.

The semi-dry pulp is hand shovelled into kettle-type driers, 10-ft. diameter and 2½ ft. deep, and capable of accommodating about 1 ton of pulp. The kettles are covered securely and steam is introduced into a jacket surrounding the kettles at 110 p.s.i. Drying time is about 4 hours. After drying, the kettles discharge to a chain conveyor that delivers the mica to a bucket elevator for movement to a bin above the final screening operations. A screw conveyor sends the product into a circular reel, 3-ft. in diameter and 10-ft. long, covered with silk cloth of desired mesh. Fines passing through the silk cloth are delivered to a bagging chute while the product retained is conveyed to a second reel. In all, there are six reels, fed by screw conveyor and bucket elevator, each reel having a cloth covering of coarser mesh.

The first reel consists of a covering of 325-mesh cloth and the sixth reel of 160-mesh cloth. Mica coarser than 160-mesh is returned to the primary grinders for return through the circuit. The products from the six reels

are blended into sacks as a finished product. Capacity of this plant is about 6 tons per day.

The No. 4 plant of the English Mica Co., purchased from the Diamond Mica Co., operates on a similar process, while the third plant uses the same wet process with the exception that a biotite mica of 1250-mesh is processed as opposed to the muscovite mica produced at the other three plants. The fourth plant produces the Micro-Mica.

### Seeks Phosphate Plant For Mobile

SEN. HILL of Alabama is pressing his bill to expand government fertilizer production despite objections by Secretary of Agriculture Anderson. The Hill bill would establish a government fertilizer plant for the production of super-phosphate at Mobile, Ala. On the hand, Secy. Anderson favors a substitute bill which would foster production of fertilizer by private companies.

### Open Quarry

DONALD WILCOX, Trenton, Mo., owner and operator of construction and ditching equipment, has opened a quarry southwest of Edinburg, Mo.



Simple scraper bucket method of excavation used by Kaolin, Inc.





J. R. LeGrand, ore-dressing engineer, demonstrates flotation of hornblends to visitors attending dedication of the North Carolina State College mineral research laboratory. Left to right: L. L. McMurray, chief engineer of the laboratory; James A. Barr, Jr., technical consultant for flotation of industrial minerals, Armour & Co., Chicago; Charles S. Gunter, vice-president, English Mica Co., Spruce Pine, N. C.; R. H. Gunter, manager, English Mica Co.; John Boyd, vice-president, United Feldspar Co., Spruce Pine; Ray T. Dent, president, Diamond Mica Co., Spruce Pine; and former Governor J. M. Broughton

## Mineral Research Laboratory

ON May 5, the new mineral dressing laboratory of North Carolina State College, erected and equipped at a cost of more than \$100,000 by a unique co-operative plan between the State of North Carolina, the City of Asheville and the Tennessee Valley Authority was dedicated.

Centrally located in the City of Asheville, N. C., this laboratory fills a long felt need for a research laboratory so completely equipped that it can offer assistance on any of the countless mineral dressing problems which have plagued all operators of nonmetallic mineral plants in Western North Carolina. Since operations in the area are individually somewhat limited in size, mineral research laboratories were few and scantily equipped. The results of such co-operative research effort will soon be evident in the increased efficiency of present processes and in the new froth flotation processes which will be used to concentrate the abundant silicate minerals found in the low grade alaskite dikes.

North Carolina and adjacent areas have long been known as a leading producer of nonmetallic minerals: Potash and soda feldspar for the ceramic industry; muscovite, biotite, and vermiculite mica for various uses; quartz, kyanite, sillimanite, talc, garnet, spodumene, olivine, asbestos, and topaz are a few of the very large number of silicate minerals found in commercial quantities.

Most of the high grade deposits have been mined out and now froth flotation processes must be used to concentrate the abundant but low grade alaskite and pegmatite ore bodies which constitute an almost unlimited source of industrial minerals.

The principal speakers on the dedication program were former Governor J. M. Broughton, former Senator J. P. Pope, a director of the Tennessee Valley Authority; Percy Ferebee of Andrews, N. C., a member of the board of the State Department of Conservation and Development; Dr. J. L. Stuckey, State Geologist; Francis J. Heazel, president of the Asheville Chamber of Commerce; Col. J. W. Harrelson, Chancellor of North Carolina State College.

On the operating advisory committee are: Mr. Broughton, Dr. W. F. Pronty, of the University of North Carolina, Dr. J. M. Parker of Sate College; Dr. E. W. Berry, of Duke University; T. G. Murdock of the State Department of Conservation and Development and Dr. J. L. Stuckey, Director of the laboratory; L. L. McMurray, chief engineer in charge of the mineral dressing laboratory is well informed on froth flotation processes and other methods for concentrating nonmetallic minerals. He is ably assisted by a staff of engineers and chemists. J. R. LeGrand, W. T. McDaniel, M. K. Banks, P. N. Sales, John B. Beverly, Albert Zukosky and Miss Betty Foster.

### Asbestos: Its Uses And History

ASBESTOS as a mineral occurs widely in every continent in the world, but asbestos in the form that is of commercial value, chrysotile, represents but one-millionth of one per cent of the total—the balance being worthless serpentine.

Many theories have been advanced to cover the origin of chrysotile. The one that has gained the widest ac-

ceptance is that hot gases, in passing through fissures in the parent serpentine have deposited previously dissolved rock in fibres or columns that today we know as chrysotile asbestos.

A physical paradox is presented by asbestos in that it is both fibrous and crystalline. It can be woven in the same manner as silk, wool or cotton; or it can be fashioned into paper in much the same way as wood pulp or rag. Some of the finished or manufactured forms taken by this versatile raw material are familiar to almost everyone in the modern world, from the asbestos curtain in the theatre to a small hot-plate protector on the dining table.

Chemically, chrysotile is a hydrous magnesium silicate that is expressed by the chemical formula  $H_4Mg_3Si_2O_{10}$ . Physically, it is composed of fibres or filaments, the exact thickness of which are unknown. The fibres of silk, cotton or wool are of uniform thickness and can be measured; but asbestos fibres may be divided again and again, with the ultimate fineness governed only by the delicacy of the machine used. Some Canadian fibres have been divided and subdivided until 3300, side by side, occupy only one inch.

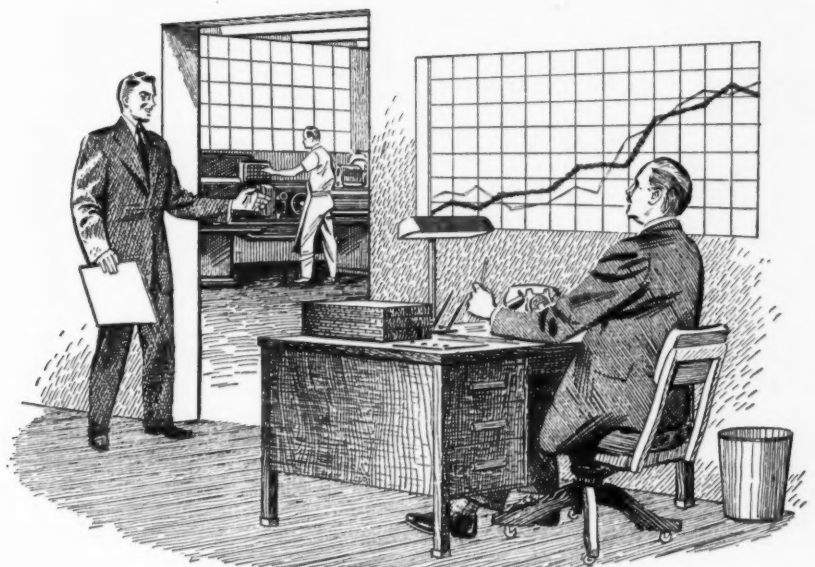
The value of chrysotile depends a great deal on the length of the fibre, with strength and flexibility playing a lesser part in price determination. The price per ton varies from \$750 for long fibre Canadian down to \$12 for short pieces that can be used only for mixing with other ingredients for such articles as floor tiles.

There are two principal chrysotile deposits in the United States: in Vermont and Arizona. The Vermont deposit is the more extensively worked, though of short fibre; while length of the fibre in the Arizona workings is sometimes even too long for weaving into textiles with present machinery.

The commercial uses of asbestos fall into three general classifications: textiles, heat insulators and building materials. Asbestos cloth is used widely—from the theatre curtain previously mentioned to protective suits and gloves for fire fighters. Perhaps the largest single use of such textile is for brake linings and clutch facings. Under the heading of heat insulators, chrysotile is used extensively both domestically and commercially. Pipe and boiler insulation, both pre-fabricated and in sheet form, provide one of the widest uses for short fibre asbestos. The several types of building supplies containing asbestos include siding, roofing, wallboard, floor tiles and shingles. Such building materials usually contain 75 to 85 per cent portland cement, with the balance made up of short fibre asbestos.

The foregoing has been abstracted from a paper titled "Asbestos, Silk of the Mineral Kingdom" by Dr. Oliver Bowles, retired Chief of the Nonmetal Economics Division of the United States Bureau of Mines, published by the Ruberoid Company of New York.

# Has your plant hidden losses in maintenance costs?



Let a **GULF LUBRICATION ENGINEER**  
help you find opportunities  
for dollar savings

DOES AN ANALYSIS of your maintenance costs reveal a large expenditure for the purchase and installation of repair parts? How much of this expense can be traced to excessive wear caused by faulty lubrication?

With Gulf quality lubricants, wear can be so reduced in many types of machinery that operation for years is possible without repairs or part replacements.

Call in a Gulf Lubrication Engineer today and let him assist you in finding opportunities for improved lubrication of your equipment. In his broad experience, he has found literally dozens

of ways to save money and increase production efficiency by the better selection and application of oils and greases. Write, wire, or phone your nearest Gulf office.

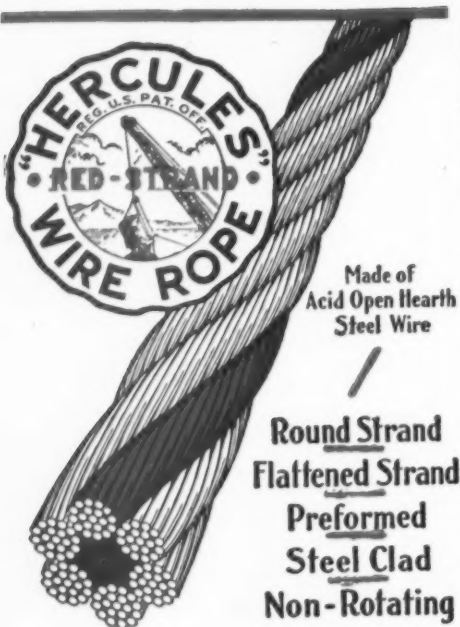
**Gulf Oil Corporation • Gulf Refining Company**

*Division Sales Offices:*

Boston • New York • Philadelphia • Pittsburgh • Atlanta  
New Orleans • Houston • Louisville • Toledo







The Service Record of this wire rope continues to make and hold friends.

MADE ONLY BY  
**A. LESCHEN & SONS ROPE CO.**  
 Established 1857  
 5909 Kennerly Avenue St. Louis, Mo.  
 New York — Chicago — Denver  
 San Francisco — Portland — Seattle

## New FARREL-BACON CRUSHER

has many advantages

Design features of this 36 x 30 E stone crusher include: (1) Meehanite frame, sectionalized when necessary; (2) removable water cooled bearings; (3) improved design of swing jaw bearing; (4) force-feed oil lubrication, or circulating system if desired; (5) split flywheels; (6) flat or V-belt drive.

Write for further details or engineering help. BA-1



## New York Specifications Covering Puzzolan Cement

STATE OF NEW YORK Department of Public Works laboratory has issued the following specifications covering Darex AEA Puzzolan cement to be used on state projects.

**DAREX AEA:** To be added prior to or during the grinding in an amount not less than 0.15 or more than 0.20 per cent by weight of the slag.

**FINENESS:** Residue on the No. 200 mesh screen shall not exceed 5 per cent by weight. (Daragg Puzzolan shall be ground in an open circuit.)

**SETTING TIME:** Daragg Puzzolan shall develop an initial set in not less than 45 min., and final set in not more than 10 hr., as tested by the Vicat needle.

**TENSILE STRENGTH:** Average tensile strength in lb. per sq. in. or (1-3) Standard Ottawa Sand briquettes made with Daragg Puzzolan shall be equal to or higher than the following:

Age of Test	Tensile Strength	Storage of Briquettes
7 day	225	1 day in moist air
28 day	275	6 days in water
		1 day in moist air
		27 days in water

Daragg Puzzolan may be accepted on the basis of the 7-day test provided previous 7- and 28-day strength tests have been satisfactory from the same mill.

**SOUNDNESS:** Pats of neat Daragg Puzzolan, about 3-in. in diameter and one-half in. thick at the center, tapering to a thin edge, shall be kept in moist air for a period of 24 hr. The pat shall then be placed in an atmosphere of steam at a temperature of between 98 and 100 deg. C. upon a suitable support 1 in. above boiling water for 5 hr. and show no signs of distortion, cracking, checking or disintegration upon removal from steam test box.

### CHEMICAL PROPERTIES

Ingredient	Min.	Max.
Lime (CaO)	38.0	46.0
Silica (SiO <sub>2</sub> )	32.0	40.0
Alumina (Al <sub>2</sub> O <sub>3</sub> )	10.0	16.0
Iron Oxide (Fe <sub>2</sub> O <sub>3</sub> )	—	1.75
Magnesia (MgO)	—	6.0
Total Sulphur (S)	—	2.0
Ignition Loss	—	2.0

Samples of slag lots shall be analyzed for quality control before grinding and failure to conform with the chemical limits specified shall be cause for rejection of the slag from the furnace in which it originates until such conditions are corrected. The blending of individual slags failing to meet the chemical requirements shall be prohibited.

## Diamond Bit Drilling

A SERIES OF TESTS to determine the most advantageous operating conditions for drilling uniform granite with diamond cast-set bits have been completed in an inactive quarry in

Woodstock, Md. The main variable factors that were under study in the tests included: power out-put, bit speed, bit load (or pressure which would yield maximum footage), highest average rate of penetration, and minimum diamond loss.

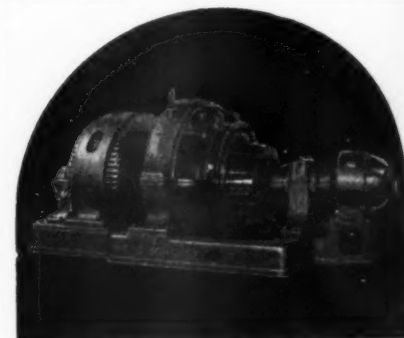
The tests of diamond drilling in this stone showed that diamond replacement was lowest when the starting bit pressure was low. Net drilling time increased rapidly with footage (average rate of penetration was 3.3-in. per minute, with average deviation less than 8 per cent).

Although diamond drilling was developed nearly 80 years ago, it has come into general use only recently. Development of the cast-set, together with the substitution of bort or impure-grade diamonds for the more costly carbons, have been the principal reasons for the recent acceptance of diamond drills.

A report covering the investigations of diamond drills by the Bureau of Mines (No. 4041) has recently been issued by the United States Department of Interior, as announced by Dr. R. R. Sayers, bureau director.

## Start Agstone Plant

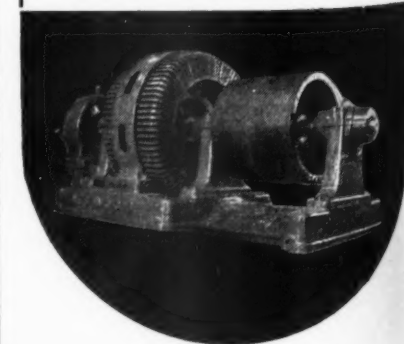
SILICA PRODUCTS CO., Tacoma, Wash., has started operations at the old Ebey quarry near Arlington, Wash., for the production of agricultural limestone, according to President Cowan.



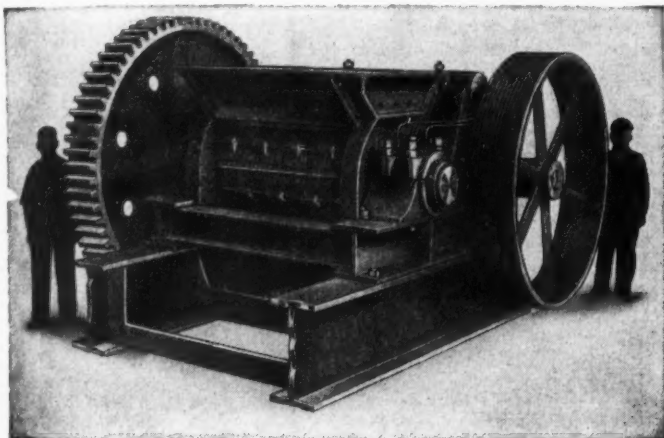
## WE ADD PEP TO POWER

Its pride and satisfaction in a job well done that has enabled Chicago Electric to maintain its guarantee of excellence in serving industry. No power equipment problem is too big or too small for our skilled craftsmen.

**CHICAGO ELECTRIC COMPANY**  
 1334 W. Cermack Rd. Chicago 8, Ill.

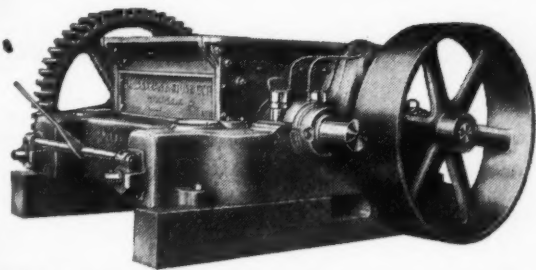


# A DOZEN GOOD REASONS FOR CHOOSING McLANAHAN SINGLE ROLL ROCK CRUSHERS



**THE ROCKMASTER AUTOMATIC STEELSTRUT  
TOGGLE PRIMARY CRUSHER—  
REMARKABLE POWER AT LOW COST**

1. All Steel Constructed 2. Cast Steel Gears 3. Automatic Steelstrut Toggle for Tramp Iron Protection 4. Chilled Alloy Iron or Steel, Interchangeable and Reversible Crushing Plate Liners 5. Hard Surfaced Steel Segment Rolls Easily Replaced Without Dismantling Machine 6. Takes Choke Feed. 7. Dry, Muddy, Wet or Frozen Material Never Packs 8. Lowest Proportion of Flats and Dust Produced 9. Slowest Speed of Moving Crushing Elements 10. Greatest Crushing Range With Opening Easily Adjustable 11. Takes Large Primary Sizes 12. Low First Cost—Low Power Cost—Minimum Repair and Upkeep Costs.



**THE STEELSTRUT SLEDGE-WEDGE CRUSHER  
HIGHEST TON-PER-DOLLAR VALUE!**

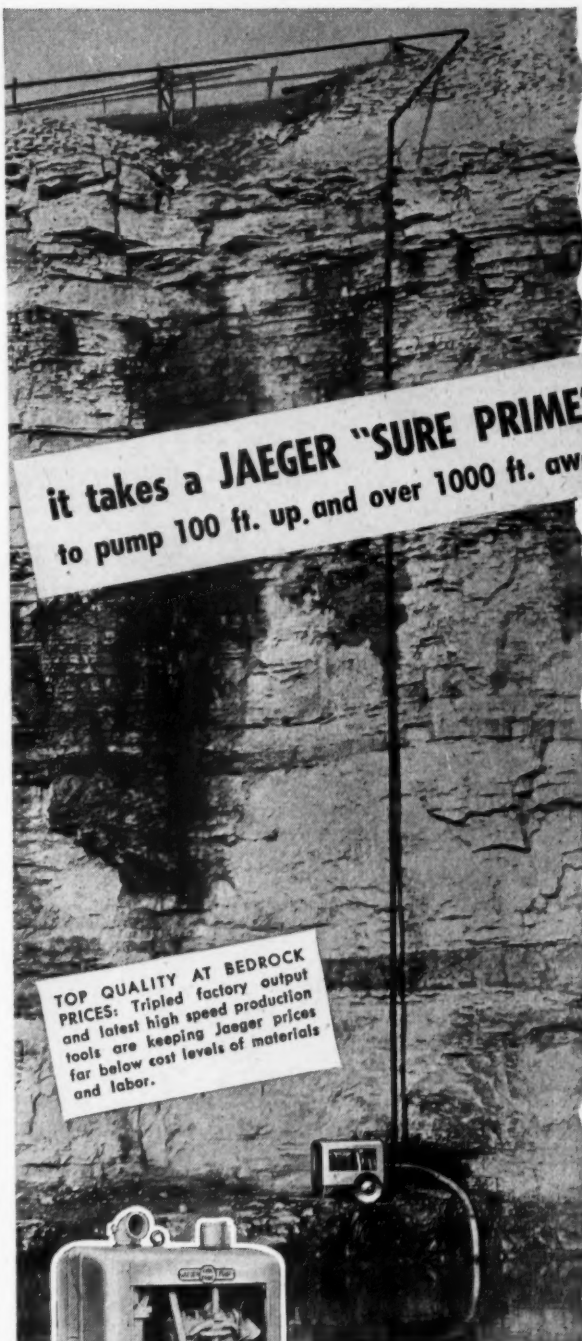
Modernize your present plant with modern, dependable, low cost McLanahan equipment. Write for descriptive Bulletins today.

**McLANAHAN & STONE CORPORATION**

Pit, Mine and Quarry Equipment Headquarters

Since 1835

HOLLIDAYSBURG, PENNSYLVANIA



it takes a JAEGER "SURE PRIME"  
to pump 100 ft. up and over 1000 ft. away

TOP QUALITY AT BEDROCK  
PRICES: Tripled factory output  
and latest high speed production  
tools are keeping Jaeger prices  
far below cost levels of materials  
and labor.



Model 4P

After 2 other well-known pumps tried it and failed, a standard Jaeger 4" Pump successfully handled this tough pumping job at Westlake Quarry, St. Louis, Mo. Remember this when you buy pumps: Jaeger "Sure Primes" are built and powered far beyond ordinary standards and kept efficient by weather-proof enclosures, which no other pumps provide. Sizes 1½" to 10".

**THE JAEGER MACHINE CO.**

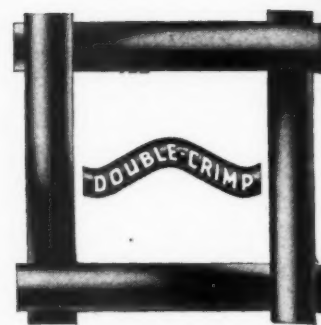
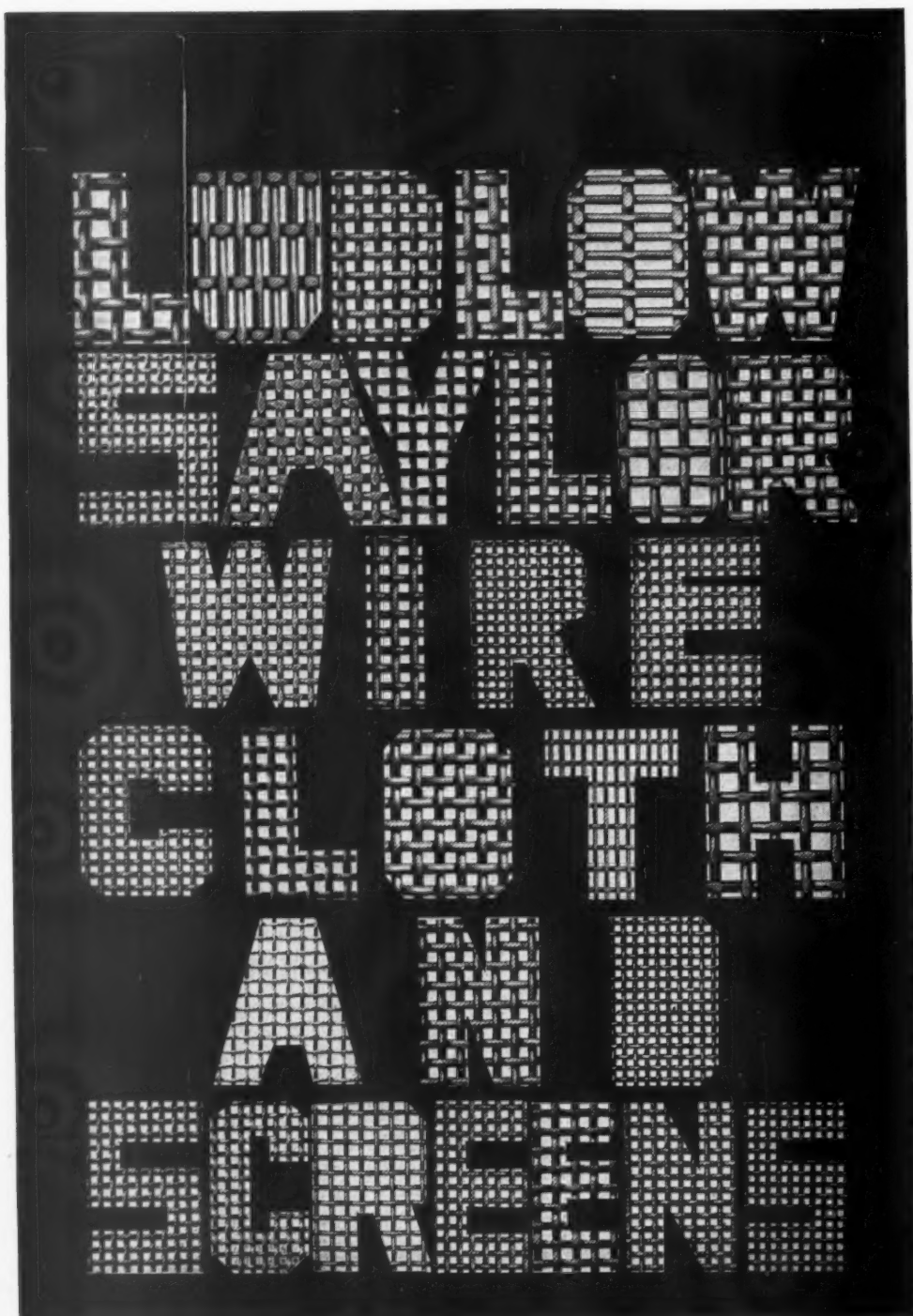
Main Office and Factory — Columbus 16, Ohio

**REGIONAL OFFICES**

8 E. 48th St. 226 N. La Salle St. 235-38 Martin Bldg.  
New York 17, N. Y. Chicago 1, Ill. Birmingham 1, Ala.

AIR COMPRESSORS, MIXERS, PUMPS, HOISTS, PAVING  
MACHINERY, TRUCK MIXERS — DISTRIBUTORS IN 128 CITIES

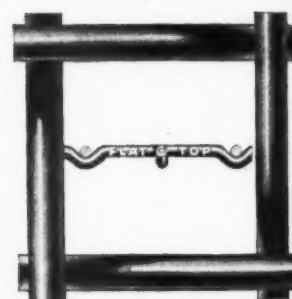




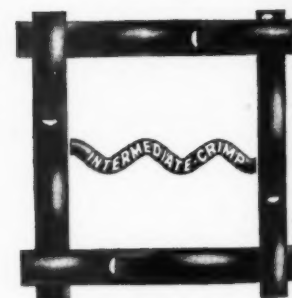
Double-Crimp



Arch-Crimp



Flat-Top



Intermediate-Crimp

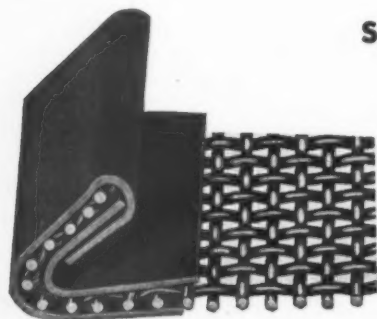
## The LUDLOW-SAYLOR WIRE COMPANY

Newstead Avenue & Wabash Railroad

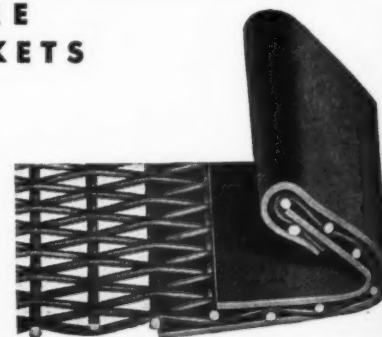
St. Louis 10, Mo.

### SUPER-LOY LIVE-WIRE SCREEN DECKS and JACKETS

Engineered to your exact requirements



Order Ludlow-Saylor *Engineered* Hook-Strips for tensioning vibrator-screen decks. They transmit to every tensioned wire an equal share of uniform vibration, evenly distributed throughout the entire screen area. They make screen decks last longer—step-up screen capacities—are easier to handle—quicker to install—need fewer adjustments and renewals.

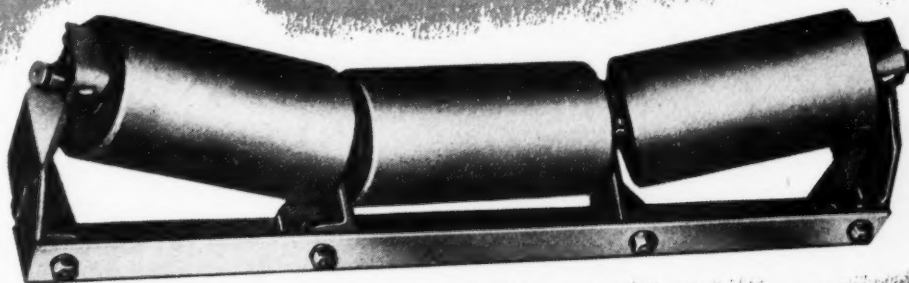




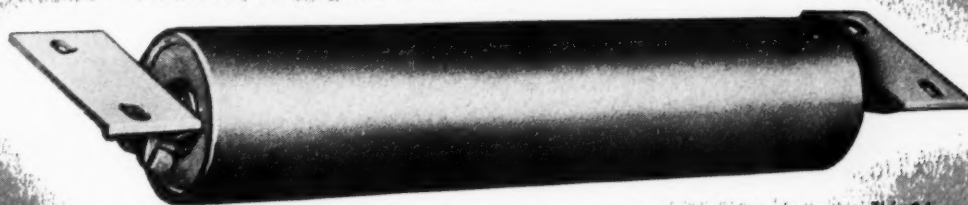
**READY  
TO  
SHIP**

# KEEP YOUR *Conveyors* IN PERFECT WORKING ORDER!

**TROUGHING ROLLS**



**RETURN IDLERS**



This 24-page booklet is full of helpful information and data that will help you solve your conveyor problems. Ask for Bulletin No. 2.

*Send for this bulletin today!*

**10 Different  
Standard Sizes  
in Stock,**

*plenty of them too! Write today.*

Cedarapids conveyor idlers are ideal for portable or stationary setups. Permanently sealed and lubricated for life, heavy duty, single row, self-aligning ball bearings require no maintenance. Idler rolls are of heavy gauge steel tubing to insure perfect and constant balance. Self-cleaning angle iron base provides plenty of strength and prevents building up of material that would stop rolls from turning freely. Strong, stubby spindles eliminate breakage usually encountered with long threaded shafts. And, best of all, they're ready for immediate shipment. Available in all standard sizes. Write today.

**Cedarapids**

Built by  
**IOWA**



**IOWA MANUFACTURING COMPANY**  
Cedar Rapids, Iowa, U. S. A.

ROCK PRODUCTS, July, 1947



# Pacific Coast Aggregates, Inc.



**RENEWING  
OUR PLEDGE  
OF  
Sensible Prices for  
Quality Building  
Materials!**



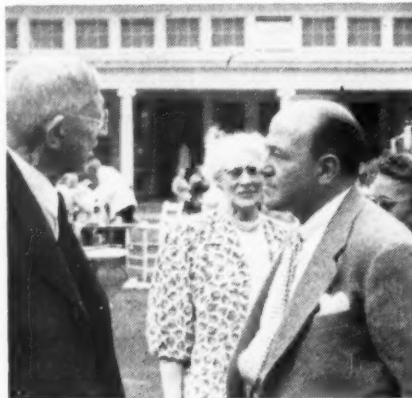
CONTACT THE NEAREST PCA OFFICE BELOW

<b>SAN FRANCISCO</b> 400 Alabama Street Klandike 2-1616	<b>SACRAMENTO</b> 16th & A Streets Ph. 3-6586
<b>OAKLAND</b> 2400 Peralta Street Higate 0770	<b>STOCKTON</b> 1020 E. Main Street Ph. 8-8643
<b>FRESNO</b> 2150 G. Street Ph. 3-5168	<b>SAN JOSE</b> 790 Stockton Avenue Ballard 8670

## Industrial Sand Registration

(Continued from page 91)

Manley, D. E., Manley Sand Co., Rockton, Ill.  
Manley, Lyle, Manley Sand Co., Rockton, Ill.  
Matthews, T. C., Pennsylvania Glass Sand Corp., Lewistown, Pa.  
Tavern Rock Sand Corp., Lewistown, Pa.  
Miller, Alfred J., Whitehead Brothers Co., New York, New York  
Miller, John H., Mifflin Sand Co., Lewistown, Pa.  
Muhlthner, B. W., Great Lakes Foundry Sand Co., Detroit, Mich.  
Muhlthner, Wm. J., Great Lakes Foundry Sand Co., Detroit, Mich.  
Newhouser, John H., South Jersey Sand Co., Dividing Creek, N. J.  
Palmer, P. W., Browntown Silica Co., Brownstown, Wis.  
Pettinos, George F., Sr., George F. Pettinos, Inc., Philadelphia, Pa.  
Putnam, John F., The National Silica Co., Oregon, Ill.  
Runkle, Charles G., Ayers Mineral Co., Zanesville, Ohio



A. B. Schlesinger, right, talking with Geo. Pettinos, Sr., with Mrs. Pettinos facing the camera

Sawyer, Ed. C., Ayers Mineral Co., Zanesville, Ohio  
Schlesinger, Arthur B., New Jersey Pulverizing Co., New York, New York  
Schneider, E. O., Ottawa Silica Co., Ottawa, Ill.  
Strauss, Junius M., Deckers Creek Sand Co., Morgantown, W. Va.  
Thornton, George A., Ottawa Silica Co., Ottawa, Ill.  
Thornton, Henry C., Ottawa Silica Co., Ottawa, Ill.  
Walker, Stanton, National Industrial Sand Association, Washington, D. C.  
Warsaw, A., Wedron Silica Co., Chicago, Ill.  
Wolf, C. R., National Pulverizing Co., Millville, N. J.  
New Jersey Silica Sand Co., Millville, N. J.  
Wright, Marcus S., Jr., South River Sand Co., Old Bridge, N. J.

### Guests

Avery, Wm., Pit and Quarry, Chicago, Ill.  
Bloomfield, J. J., U. S. Public Health Service, Washington, D. C.  
Hatch, Theodore F., Industrial Hygiene Foundation, Pittsburgh, Pa.



Betty Putnam turned in a good score

Megee, Caleb, Association of American Railroads, Washington, D. C.  
Torgerson, Ralph S., Rock Products, Chicago, Ill.  
Waters, Theodore C., Counsel, Baltimore, Md.

### Ladies

Bohon, Thomas, Mrs.  
Bos, N. C., Mrs.  
Bryant, C. F., Miss  
Campbell, Louise, Mrs.  
Coxey, J. S., Jr., Mrs.  
Crew, J. A., Mrs.  
Crissey, N. H., Mrs.  
Cronenweth, Russell, Mrs.  
Daugherty, E. H., Mrs.  
Durstine, E. M., Mrs.  
Farmer, Sterling, Mrs.  
Hardy, C. M., Mrs.  
Hardy, Thomas H., Mrs.  
Manley, D. E., Mrs.  
Matthews, T. C., Mrs.  
Miller, Alfred J., Mrs.  
Muhlthner, Marion, Mrs.  
Muhlthner, Wm. J., Mrs.  
Palmer, P. W., Mrs.  
Pettinos, Geo. F., Sr., Mrs.  
Putnam, John F., Mrs.  
Putnam, Betty, Miss  
Runkle, Charles G., Mrs.  
Sawyer, E. C., Mrs.  
Schlesinger, Arthur B., Mrs.  
Schneider, E. O., Mrs.  
Thornton, George A., Mrs.  
Thornton, Henry C., Mrs.  
Walker, Stanton, Mrs.  
Warsaw, A., Mrs.  
Wolf, C. R., Mrs.

## Establish County Quarry

COMMISSIONERS of Kitsap County, meeting at Seattle, Wash., went on record as favoring a new quarry site about one-quarter mile south-east of the present pit, which is becoming exhausted. The project will cost an estimated \$4,500 and is scheduled for completion in June. The pit will be operated on a royalty basis with the county agreeing to pay 1½ cents per cu. yd. for the material.

## Construction Co. to Open Pit

NUSSDORF CONSTRUCTION Co., Manchester, Conn., is opening a new gravel pit to secure aggregate for use in their own construction work. The company is at present using two power shovels, a dozer and a grader to remove overburden.

## Opens Office

GYPSUM ASSOCIATION, Pacific Coast Division, has opened an office in the Architects Building, Los Angeles, Calif.



Russell Cronenweth, trying for a long drive



**RICH NATURAL RESOURCES**  
**CENTER OF NATIONWIDE MARKET**  
**PROGRESSIVE INDUSTRY**  
**FIRST IN WHEAT PRODUCTION**  
**PRODUCTIVE AGRICULTURE**  
**ABUNDANT WATER**  
**DEPENDABLE RAIL TRANSPORTATION**  
**NATIVE BORN WORKERS**  
**MODERATE LIVING COSTS**

# Kansas \*

*\* One of a series of advertisements based on industrial opportunities in the states served by the Union Pacific Railroad.*

**K**ANSAS—almost in the exact geographical center of the United States; an important factor to industries serving nationwide markets.

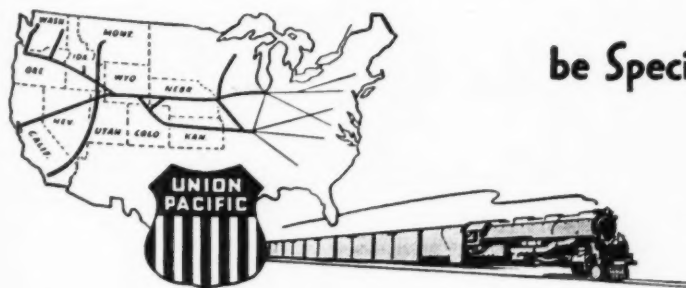
Agriculture is king. Kansas normally ranks first in wheat production. In addition to grains, vegetables and fruits, a large part of farm income is derived from livestock and poultry.

Kansas industry keeps step with agriculture. There are approximately 2,500 manufacturing and processing establishments. Over four million

tons of coal are mined annually. Here is the largest natural gas field in the world. Eighteen principal rivers with two great watersheds provide an abundance of water. The population is 97 per cent native born.

★ ★ ★

Kansas . . . the hub of a rich market; a treasure chest of natural resources with dependable labor; outstanding public health record; moderate living costs; and excellent transportation over Union Pacific rails.



**be Specific - say**

**"Union Pacific"**

*\* Address Industrial Department, Union Pacific Railroad, Omaha 2, Nebraska, for information regarding industrial sites.*

## UNION PACIFIC RAILROAD

THE STRATEGIC MIDDLE ROUTE

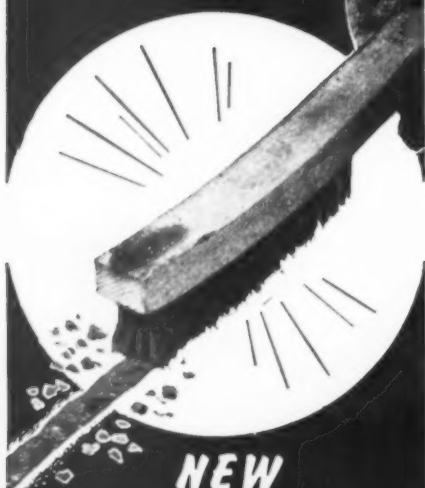
ROCK PRODUCTS, July, 1947



## Why CHIP Slag

when you can

# BRUSH IT AWAY!



**NEW**  
**EXTRUSION COATING**  
improves weldability of  
**COATED STOODY\***  
**SELF-HARDENING!**

*\*For resisting impact and abrasion on earth-working equipment.*

Those clean, bright beads of Coated STOODY SELF-HARDENING are ready for a second deposit without tedious chipping with a hammer. For this improved extruded coating forms a slag that readily loosens from the weld as deposits cool. Simply BRUSH it away and you're ready for the next deposit! And here are other improvements:

### THE NEW EXTRUSION COATED STOODY SELF-HARDENING

- ✓ Is easier to apply.
- ✓ Retains same hardness and wear resistance of former alloy.
- ✓ Has higher deposition rate.
- ✓ Can be applied with either AC or DC machines.
- ✓ Possesses wide amperage latitude in welding.
- ✓ Is completely uniform.
- ✓ Is free from moisture absorption.

Order 50 lbs. today! You'll enjoy greater ease and speed in welding—and are assured of the time-proven wear protection of the former alloy. Available in 3/16", 1/4", 5/32", and 1/8" rods. No change in price. Over 600 U.S. Dealers.

**HOW TO GET THE MOST FROM HARDFACING:**  
Ask for free copy of the new STOODY GUIDE BOOK  
... illustrates 125 proven applications for increasing equipment life!

**STOODY COMPANY**  
1129 W. SLAUSON AVE., WHITTIER, CALIF.

**STOODY HARD-FACING ALLOYS**

Retard Wear • Save Repair

## Chemical Lime

(Continued from page 85)

if our interest is in masonry lime, since in that case, if present in unsuitable amounts of suitable composition and proper distribution, with lime properly burned and properly hydrated, a much better lime for that particular purpose would be obtained. Lime men are definitely at fault for not having developed such a product and its market to a greater extent. To call argillaceous matter "impurities" is not always right, as to the cement producer they are "all" important and only in respect to chemical lime are they impurities.

Magnesia also may and may not be an impurity. It would be of use in neutralizing processes, merely a useless burden for most of the other uses of chemical lime and of definite harm in some others, such as carbide or in the manufacture of chloride of lime, giving just two examples.

Iron, sulphur, manganese, phosphorous, and fluorine may always be considered impurities. Manganese even in very small amounts is discoloring to lime, phosphorus is highly objectionable in carbide. Iron is discoloring and tends to the formation of low-fusing point compounds. Sulphur is very objectionable whether its origin is in stone or coal, it affects the lime in its behaviour and it reduces availability, and of course is directly undesirable in metallurgical processes. Possible sulphur reactions in a kiln are many; we are tracing them down but the progress is slow.

It is impossible to place definite limits in the specifications as to what any impurity content may be, as it depends not only on amount but also on the initial combination and on dispersion. For example, silica may be present as quartz which has a high fusing point and as such does not readily combine with lime at the ordinary kiln temperatures. On the other hand, silica combined with alumina in clay combines very readily and at relatively low temperatures, but again exactly how readily depends on dispersion.

Some relatively equally pure limestone tends to burn into an entirely different behaving lime. The difference in the content of impurities often does not offer any sort of an explanation. It can not well be ascribed to the silica, alumina or iron content as reported. If dissemination of impurity is studied microscopically that often also does not present the answer. Still one lime burned at about the same temperature may be affected by the heat far more than another; be heavier, denser, slower slaking, quicker settling and one may harm the brick lining far more than another. The likely reason for this in most cases may be that the iron, which is always reported as ferric iron, is present as ferrous iron which is a most active

(Continued on page 105)

# RYERSON STEEL

in Stock - Prompt Shipment



Dependable steel products and unequalled steel service facilities... available for your steel-buying convenience at twelve conveniently located Ryerson plants. Because of great demand, all sizes are not always in stock; but we usually can suggest a reasonable alternate.

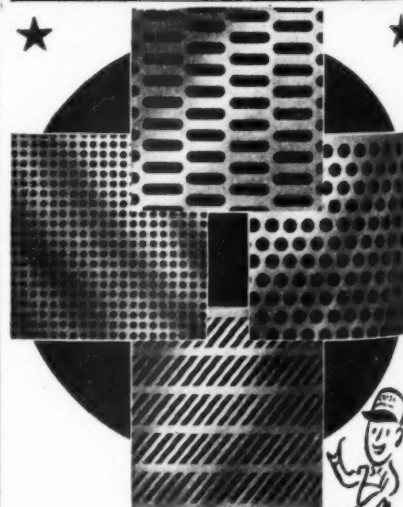
### PRINCIPAL PRODUCTS

Bars • Structurals • Plates • Sheets  
• Tubing • Allegheny Stainless • Alloy Steel • Safety Floor Plate • Bolts • Rivets • Metal Working Tools & Machinery, etc.

**JOSEPH T. RYERSON & SON, INC.**

Plants: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles

**YOU CAN DEPEND ON  
MAXIMUM SCREENING  
EFFICIENCY with  
HARRINGTON & KING  
PERFORATED METAL**



Write for Catalog  
and Prices

**The Harrington & King CO.**  
PERFORATING

5650 FILLMORE ST., CHICAGO 44, ILLINOIS  
114 LIBERTY ST., NEW YORK 6, N. Y.

(Continued from page 104)

fluxing compound. With iron present in this form, it not only does harm in itself but through it, all of the impurities exert their deleterious effect to a greater extent.

However, in the manufacture of clinkered dolomite, ferrous iron is very desirable and its presence explains while some dolomites may be satisfactorily clinkered without artificial admixtures of iron oxide or other fluxing compounds.

To what disproportionate extent impurities may effect availability is demonstrated by Fig. 4, presenting insoluble percentage plotted against available CaO. However, this is for just one calcination temperature, a higher or a lower temperature would give results which would be reflected in a differently sloping curve, and the lower the temperature the higher the availability would be. About all that we can do about impurities unavoidably present is to regulate the temperature of calcination and there we can do a whole lot; a few hundred degrees up or down make a great deal of difference in the appearance, quality and behavior of lime.

CO<sub>2</sub> in combination with CaO to carbonate is usually not considered an impurity, but it is. It not only is a burden and also negatives its equivalent portion of CaO, but may be responsible for negating a far greater portion of otherwise available CaO. It does more harm than its possible combination may indicate, just as insoluble impurities will do more harm than their possible combinations with CaO would indicate. The only reason for this being occlusion, of course, that is, isolation of otherwise active lime.

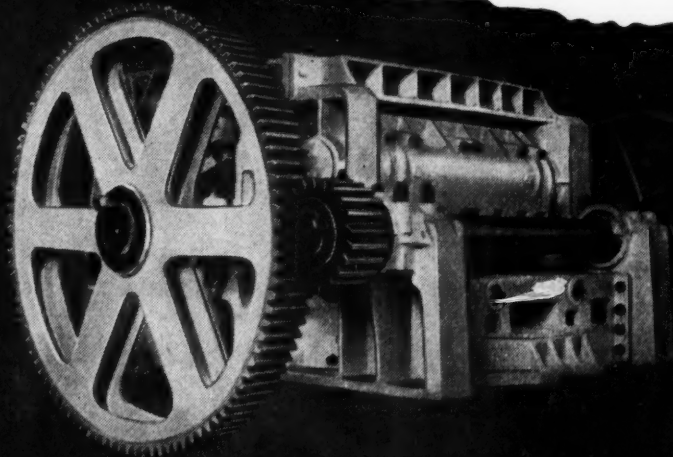
This country is very fortunate as we have a great many deposits of rather pure limestone, but this is not the case the world over. In some countries there is little or even none. To not have good limestone is a great industrial handicap as lime may be called one of the five most important raw materials of the industrial world. The others are coal, iron ore, sulphur, and salt. Therefore calcination of low grade limestone through temperature control to a higher grade lime than ordinarily possible has enormous possibilities and great economic value. It definitely is possible to take relatively impure stone, calcine it softly and obtain a lime of higher availability than produced today from often relatively pure stone.

This is a further illustration of the contention that one can not fence in lime by means of specifications of the ordinary type as it somehow always tends to break through.

### New Agstone Plant

LINDSAY LIME AND STONE PRODUCTS Co., Lodi, Wis., has started agricultural limestone processing operations on the Lindsay farm. Robert Ramsey, Baraboo, Wis., is managing the plant.

FOR *Primary Crushing* GET A  
"PENN-LEHIGH" AND YOU GET...



- High Tonnage Capacity
- Low Power Consumption
- Continuous Performance
- Wet or Dry Materials

"Penn-Lehigh" Crushers are recommended for the primary reduction of cement rock, shales, phosphates, metalliferous ores, industrial minerals and limestones. They have extraordinarily high tonnage capacity at low power requirements, and capacity is not materially lessened by wet or frozen feed. They require little headroom, may be choke or continuously fed, feed materials freely, are continuous in operation. The numerous roll teeth "churn" materials in the hopper, minimize arching and packing and down-time from these causes. Capacities 200-1,000 tons hourly.

Like other "Pennsylvania" Crushers of various types "Penn-Lehighs" are massive, Steelbuilt, with large safety factors and exclusive safety devices—to minimize wear, damage and maintenance. Many other advantages.

Inquiries are invited and engineering services are freely available.

### PENNSYLVANIA CRUSHER COMPANY

Liberty Trust Bldg.

Philadelphia 7, Pa.

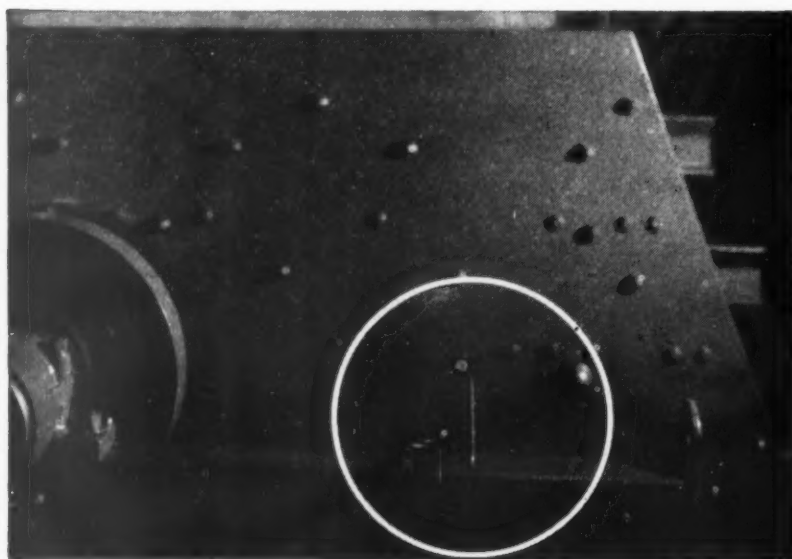
New York • Pittsburgh • Birmingham • Chicago • Los Angeles  
Associated with Frazer & Chalmers Works, London

"PENNSYLVANIA"  STEELBUILT





## No Waste Motion!



## ...with a SECO Vibrating Screen

● Contrast the drawing above with the unretouched photo of a Seco vibrating screen moving at 1050 R. P. M. Here is conclusive proof (note the pencil and washer on the base frame are unshaken) that Seco keeps all of the vibration in the live body... where it belongs. Note also, if you have a magnifying glass, that there are many little circles visible on the side plates. These indicate that the screen's motion is in true circles, with no distortion. No wonder operators everywhere report increased tonnages on all types of screening jobs with these dependable Seco vibrating screens. Write for "A Guide to Better Screening." Dept. B

TRUE  
CIRCULAR  
MOTION  
VIBRATING  
SCREENS

# SECO

SCREEN EQUIPMENT COMPANY, INC.  
9 LAFAYETTE AVENUE, BUFFALO 13, N. Y.  
In Canada United Steel Corp., Ltd., Toronto

## "Manganese Steel" Definition

IN THE ATRICLE in the January issue of ROCK PRODUCTS, p. 107, on "Where to Buy Repair Parts?" a statement made in an article in 1937 was repeated. This said "that there is no general understanding as to what constitutes manganese-steel." The point made was that the purchaser of castings which a local foundry claimed to be made of manganese-steel, was not what he thought he was getting when perhaps the percentage of manganese in them did not entitle the castings to this classification.

We are informed by a representative of the American Manganese Steel Division of the American Brake Shoe Co., that purchasers of manganese-steel castings should know by this time that: "Standard manganese-steel is an alloy of manganese, carbon and iron, containing 10 to 16 per cent (usually close to 13) manganese, and is austenitic after beating and quenching. Low manganese-steels containing 1.5 to 2 per cent manganese do not have the same properties.

"Austenitic," according to the dictionary means: "The property of a substance, determined microscopically, of becoming a constituent of steel under certain conditions, and regarded as being a solid solution of carbon or iron carbide in iron." The word apparently means considerable to steel founders because they distinguish between austenitic steel (10 to 14 per cent manganese) and the "pearlitic" manganese steel (2½ to 3 per cent manganese). It is said any foundry can make the pearlitic product, but only about a half dozen the austenitic one. The pearlitic manganese-steel, while not having the properties desired in austenitic manganese-steel, does have excellent properties for some uses—in fact better than the austenitic product.

Incidentally "pearlitic" means "the properties of pearlite, which is the eutectoid alloy of carbon and iron, containing 0.9 per cent of carbon, which is the iron-carbon alloy of lowest transformation point in the solid." Since manganese-steel founders throw these terms around so familiarly, we wondered why they did not define them for the benefit of laymen. Now, having found out what the terms mean, we see why we and other laymen had best steer clear of too fine distinctions. All the layman needs to know is that there are at least two kinds of what some founders call loosely "manganese-steel," and that one is *not* a substitute for the other.

## Potash Plant Expansion

AMERICAN POTASH & CHEMICAL Co., has announced plans for extensive alterations and expansion at the Tro-na, Calif., plant that will cost nearly \$7,000,000.

## Labor Relations

(Continued from page 76)

out regard to classification, rates and standards for jobs set forth in the contract, and without regard to individual skills, wages or salaries of the recipients. The total amount distributed varied from year to year between as low as \$5,540 to as high as \$26,223, being, as mentioned, 25 per cent of the entire net profit of the company.

As in the other cases the F.L.S.A. Administrator won his point that the over-time rate must be computed on the basis of the actual hourly earnings, which should have included the variable sums received under the profit-sharing agreement. The court's decision says: "That the bonus payments are not made weekly or monthly is of no consequence. The significant fact is what the parties agree the employees shall receive—by way of wage scale or share of the profits, or both—for the workweek, although the exact sum may not be susceptible of computation until some period subsequent to the time in which it was earned.

### Conclusions

One can imagine the bookkeeping involved even with only 100 employees, if all individual over-time pay must be made on projected profits that subsequently must be revised, as well as on the various ordinary regular rates. Nevertheless, there are many profit-sharing plans in successful operation. Unless the employer has been able to devise some way of distributing the employees' share without a collective bargaining contract and on other than a purely time-worked basis, or unless he has devised a scheme for paying over-time on a basis which includes the variable profit-sharing increment, he is liable under these now well established court decisions for back wages and penalties which he did not anticipate in his desire to give employees the fairest possible break. Obviously, he if not his employees would have been better off if the experiment had not been tried; which is unfortunate, for many progressive employers have looked forward to profit-sharing as a just solution of labor controversies over wages. We know of at least one instance where profit-sharing, long in effect, was dropped to avoid such complications under the Fair Labor Standards Act of 1938.

### Silicon for Highways

DR. CHAS. REED of the General Electric Co., at a recent meeting of the American Chemical Society said that silicone resins may be used in road construction. They repel water from all kinds of surfaces, leading scientists to believe that more durable, weather resistant asphalt roads and also bituminous roofing materials can be produced.

# BUSINESS END



of efficient dredges



## THE EAGLE "SWINTEK" DREDGING LADDER

You're looking at the business end of the E. T. Slider Inc. Dredge No. 5 in the photograph above—recent modernization of this dredge included installation of the 15"-75' Eagle "Swintek" Dredging Ladder shown. Note side braces for additional strength to permit underwater traversing of ladder for more thorough clean up of deposit. "Swintek" was the choice because a similar installation on Dredge No. 4 has, for 17 years, given a 30% increase in production . . . has eliminated previous difficulty with boulders and penetration of hard pan. About this new dredging ladder, Mr. Slider says, "Our Swintek cutter and ladder work perfectly."

Continuous operation . . . even flow of materials . . . reduced wear on pump . . . deeper dredging . . . dredging of hard packed material—the Eagle "Swintek" gives you all these important advantages. Continuous traveling chain keeps oversize away from nozzle and out of system—eliminates clogging and damage. Chain cutter bars cut and loosen deposit to increase volume pumped. Send for Catalog 745.



**Sand and Gravel Equipment**  
**"SWINTEK" DREDGE LADDERS — SCREW WASHERS**  
**LOG WASHERS — DEHYDRATORS — SAND TANKS**  
**CLASSIFIERS — REVOLVING SCREENS**

**EAGLE IRON WORKS**

137 Holcomb Ave.

Des Moines, Iowa



# ALL IN A DAY'S WORK

8 A.M.

• LOADING FROM STOCKPILE AT 8 A.M.

10 A.M.

• DITCHING 30 MILES AWAY AT 10 A.M.

The SCHIELD BANTAM travels on the highway at normal speeds. Drives right up to the job and starts to work without wasting time. Use it as a dipper, trench hoe or dragline. The BANTAM handles stockpile material at a rapid pace, digs ditches in varying widths up to 10' deep, and works wherever larger heavy weight equipment is not profitable. Simple, centralized controls. Full-circle design. Perfectly balanced for easy handling. Interchangeable booms. Wide selection of attachments for fast operations. Complete unit weighs 4 tons. Mounts on 6 x 6 truck or half-tracks.

WRITE FOR COMPLETE DETAILS

**SCHIELD BANTAM CO. INC.**  
Waverly, Iowa

SCHIELD BANTAM 1/4-YARD PORTABLE SHOVEL-TRENCH HOE-CLAM-DAGLINE



## FINANCIAL

### RECENT DIVIDENDS

Basic Refractories, Inc.	..... \$ .10	June 14
Ideal Cement Co.	..... .40	June 30
Lone Star Cement Corp.	..... .87½	June 27
National Gypsum Co. pfd.	..... 1.12½	June 2
Pennsylvania-Dixie Cement Corp.	..... .25	June 14
Pennsylvania Glass Sand Corp.	..... .35	July 1
Pennsylvania Glass Sand Corp. pfd.	..... 1.25	July 1
U. S. Gypsum Co.	..... .50	July 1
U. S. Gypsum Co. pfd.	..... 1.75	July 1

GENERAL PORTLAND CEMENT CO., Chicago, Ill., showed a net profit of \$409,900 for the three months ended March 31, 1947 as against a profit of \$319,500 for the similar quarter in 1946. Sales for the first quarter in 1947 were \$2,852,400 as compared with \$2,773,700 in the first quarter of 1946.

CANADA CRUSHED STONE, LTD., Hamilton, Ont., Canada, had a net profit of \$85,214 for the year ended December 31, 1946. This compares with a profit of \$50,341 for the year ended December 31, 1945.

NATIONAL GYPSUM CO., Buffalo, N. Y., showed the following statement of consolidated earnings for the three months' period ended March 31:

	1947	1946
Net sales	\$11,619,895	\$7,526,898
Cost & expenses	9,244,068	6,180,816
Depr., deplet., etc.	320,447	181,208
Doubt. acct. res.	31,530	20,090
Operating Profit	2,023,850	1,144,784
Other income	1,194,607	28,772
Total income	2,218,457	1,173,556
Interest, etc.	69,546	67,187
Other deductions	26,794	19,009
Income taxes	307,500	413,400
Net profit	1,814,617	673,960
Earn., pfd. share	\$15.97	\$8.19
No. of pfd. shares	82,250	82,250

<sup>1</sup> Includes \$153,822 income from marine operations.

LONE STAR CEMENT CORP., New York, N. Y., has presented the following consolidated earnings for three months to March 31:

	1947	1946
Sales	\$9,419,773	\$8,856,598
Mfg., etc., costs	5,886,862	5,860,133
Selling, etc., exp.	900,071	796,118
Deprec. & deplet.	482,985	450,364
Operating profit	2,149,855	1,749,983
Other income	121,798	159,567
Total income	2,271,653	1,909,550
<sup>1</sup> Misc. deductions	158,863	227,318
Fed. income tax	475,322	413,361
Other income tax	181,948	105,566
Other taxes	280,281	190,329
Net profit	1,175,239	972,976

<sup>1</sup> Includes provisions for doubtful accounts and contingencies.

Note: Results of South American subsidiaries included above are figures at average exchange rates, except as to provision for depreciation and depletion, which is based on dollar value of fixed assets at time of acquisition.

WOLVERINE PORTLAND CEMENT CO., Kalamazoo, Mich., now in receivership, will be reorganized. It has been announced that pursuant to a court order in reorganization proceedings, creditors and stockholders must file proofs of claims with the bankruptcy referee, C. C. Woolridge, Grand Rapids, Mich., before May 26.

CALAVERAS CEMENT Co., San Francisco, Calif., has reported the following statement of income for the years ended December 31:

	1946	1945
Net sales .....	\$1,873,889	\$1,667,705
Cost of sales .....	1,453,186	1,364,685
Selling, etc., expense .....	291,692	245,843
Accel. amort. ....	.....	34,972
1 Operating profit .....	129,011	32,205
Prof., assets sold .....	1,582	2,608
Other income .....	4,298	1,445
Total income .....	134,892	36,258
Interest paid .....	.....	623
Fed. income tax .....	55,213	16,406
Income tax ref. ....	.....	4 cr 37,336
Net income .....	79,679	56,566
Preferred divs. ....	.....	16,013
Surplus for year .....	79,679	40,553
Earn. surplus, 1-1 .....	901,938	861,384
Contingency res. ....	cr 50,000	.....
Earn. surp., 12-31 .....	1,031,617	901,938
Earn., pfd. share .....	\$4.97	\$3.53
2 Earn., com. sh. ....	d 0.26	d 0.44
No. of pfd. shares .....	16,013	16,013
No. of com. shares .....	124,437	124,437

<sup>1</sup> After depreciation, depletion and amortization: 1946, \$219,101; 1945, \$317,535.

<sup>2</sup> Disregarding preferred arrears.

<sup>3</sup> Adjusted.

<sup>4</sup> Refundable under carry-back provisions. Note: Effective Jan. 1, 1946 company changed its method of accounting for depreciation, depletion, and amortization, which resulted in reducing profits for 1946 after Federal income taxes by approximately \$10,000.

Stockholders have voted approval of the company's recapitalization plan for the issue of 16,013 shares of prior preference stock convertible into four shares of common on January 1, 1952; increase of authorized common stock to 200,000 shares from 130,000; and issue of \$1,601,300 of 4½ per cent cumulative income debentures due 1966.

HERCULES CEMENT CORPORATION, Philadelphia, Penn., has authorized by vote of the directors an increase in no par common stock from 30,000 to 60,000 shares. The directors voted to reduce the stated value from \$65 to \$32.50 per share, and exchange two new shares for each old share.

NORTH AMERICAN CEMENT CORPORATION, New York, N. Y., had a net profit of \$359,054 for the 12 months ended March 31, 1947. This compares with a deficit of \$88,143 for the 12 months ended March 31, 1946.

ALPHA PORTLAND CEMENT Co., Easton, Penn., showed the following earnings for the three months ended March 31:

	1947	1946
Net sales .....	\$13,043,153	\$7,582,578
Oper. expenses .....	8,305,899	5,614,227
Maint. & repairs .....	1,686,973	867,813
Depreciation & depletion .....	570,400	527,903
Operating profit .....	2,479,882	572,635
Other income .....	117,237	111,586
Total income .....	2,597,119	684,220
Income charges .....	12,932	72,518
Fed. income tax .....	1,003,579	174,069
Net profit .....	1,580,608	437,634
Dividends .....	1,034,873	591,356
Surplus for per. ....	545,735	1 d 153,722

<sup>1</sup> Before crediting \$200,000 war contingency reserve no longer required.

Stockholders have approved a contributory retirement plan for employees, effective April 1, 1947.

DIAMOND PORTLAND CEMENT Co., Middle Branch, Ohio, reports a net income of \$101,578 for the year ended December 31, 1946, as against \$24,822 for the year ended December 31, 1945. President Richard D. Raff has announced that shareholders have been notified of a proposal to issue 24,000 additional shares of common stock at

## ASSURED KILN EFFICIENCY with THERMALLOY



- RAY CONTROLLED

### SEGMENTAL FEED ENDS

Correct CHEMICAL BALANCE due to high standards of chemical and metallurgical control, is an important factor in many highly successful THERMALLOY kiln applications.

THERMALLOY sectional feed ends designed for load carrying strength up to 2200° F. are resistant to elevated temperatures and destructive gases. Warping and cracking is held to a minimum.

A THERMALLOY feed end installed in your kiln will increase your plant efficiency.

HEAT RESISTANT

THERMALLOY nose rings, damper doors, feed pipes, cooler grates, drag chain or other kiln applications are X-RAY CONTROLLED.

AMSCO ALLOY and THERMALLOY are identical

AMERICAN  
**Brake Shoe**  
COMPANY

ELECTRO-ALLOYS DIVISION

ELYRIA, OHIO.



when you need  
a perforated  
bucket  
**BUY PAGE**



**PAGE PERFORATED AUTOMATIC BUCKET**  
All AUTOMATICS are rated by standard measurement — a 1 cu. yd. bucket is capable of carrying 1 cu. yd. or more.

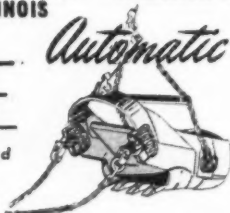
## you'll get all the superior digging advantages of the PAGE AUTOMATIC

PAGE perforated buckets are guaranteed to outdig ordinary dragline buckets at any depth and to have less pounds pull on the machine. They are as light as, and in some cases lighter than, ordinary perforated buckets. Perforations are placed only where needed to release water and not for reducing the weight of the bucket. Actually, perforations save less than 1% of the total weight. Too many holes only weaken the bucket.

Unlike ordinary buckets, the Perforated AUTOMATIC will not push up a windrow. It digs in immediately at the first pull on the drag rope and will get a full load within one or two bucket lengths. Page, the inventor of perforated buckets, offers you the best digging bucket possible to serve you profitably. When buying a bucket for wet digging, insist upon a Page Perforated AUTOMATIC.

**PAGE ENGINEERING COMPANY — CLEARING POST OFFICE, CHICAGO, ILLINOIS**

**PAGE**  
DRAGLINE BUCKETS and  
WALKING DRAGLINES



Write for new  
booklet "How to  
Get the Most Out of  
Your Page Auto-  
matic Dragline  
Bucket."



## PULVERIZERS

**Hundreds of Installations . . .  
Use Bradley Pulverizers**

for the reduction of

**AGRICULTURAL LIMESTONE**  
Cement Materials and all  
Dry, Non-Metallic Minerals

**CAPACITIES: 1 TO 50 TONS PER HOUR**  
**FINENESSES: 20 TO 350 MESH**

# BRADLEY PULVERIZER CO.

ALLENTOWN, PENNA.

\$12.50 a share in ratio of one share of new stock for each three held. There are 72,000 shares now outstanding. Proceeds of this financing, in addition to a \$450,000 term loan, will be used to expand plant capacity about 50 per cent.

PACIFIC PORTLAND CEMENT Co., San Francisco, Calif., showed a net profit of \$572,416 for the year ended December 31, 1946, as compared with \$9542 for the year ended December 31, 1945. Sales for the 12 months ended December 31, 1946 amounted to \$5,883,542 as against \$4,297,804 for the same period in 1945. The company reports that earnings for 1945 were adversely affected by a loss of \$211,812 on disposal of plant and equipment. Continued demand for cement and gypsum products is anticipated for 1947. Plants are operating at capacity and the cement mill at San Juan Bautista, Calif., held as a standby plant since 1943, has resumed production and shipments began April 1, 1947.

COLONIAL SAND & STONE Co., INC., New York, N. Y., reported a net profit of \$136,259 for the first quarter of 1947. Net sales during the first quarter were \$1,884,794. Net profit for the year ended December 31, 1946 was \$488,617. Sales in 1946 were \$6,569,226.

NATIONAL GYPSUM Co., Buffalo, N. Y., sold 6600 additional shares of no par \$4.50 cumulative preferred stock at \$100 per share plus accrued dividends to W. E. Hutton & Co., N. Y., for reoffering to not more than 25 persons for investment. The sale was made to increase working capital.

MONOLITH PORTLAND MIDWEST Co., Los Angeles, Calif., had a net profit of \$120,623 for the year ended December 31, 1946 as compared with a profit of \$3,862 for the calendar year 1945.

MINNESOTA MINING & MFG. Co., St. Paul, Minn., reported a net income of \$2,577,584 for the three months to March 31, 1947 as against a net income of \$1,471,535 for the first quarter in 1946. Net sales in the first quarter of 1947 were \$21,526,429 as compared with \$14,675,905 in the first quarter of 1946.

AMERICAN AGGREGATES Co., Greenville, Ohio, showed a net income of \$729,902 for the year ended December 31, 1946 as compared with a net profit of \$231,363 for 1946. Net sales in 1946 were \$3,316,538 as against \$2,289,906 in 1945.

PACIFIC COAST AGGREGATES, INC., San Francisco, Calif., showed a net profit of \$107,489 for the three months ended March 31, 1947, as compared with \$36,751 for the same period in 1946. Sales amounted to \$2,331,681 for the first quarter of 1947 as against \$1,252,062 for the first quarter of 1946.

## Manufacturers' News

The Falk Corp., Milwaukee, Wis., announces the appointment of Henry W. Kayser as supervisor of development engineering.

Barber-Greene Co., Aurora, Ill., has appointed Wayne D. Adamson as advertising manager, replacing John H. Dykstra, who is now associated with an advertising agency in Cleveland.

Jones & Laughlin Steel Corp., Pittsburgh, Penn., announces the following personnel changes: J. E. Timber-



C. E. Kendall

lake, manager of sales, wire products, has been made assistant general manager; C. E. Kendall, assistant manager of sales, has been named manager of sales, and D. J. Henecker, assistant manager of sales, has been appointed manager of sales, wire rope products. Howard A. Knox, assistant manager of sales, tin mill products, has been appointed manager of sales, succeeding D. W. Thomas, who has been made assistant general manager of sales. Mr. Thomas succeeds J. H. Anderson who has been named district sales manager of the New York district sales office. S. A. Fuller, formerly New York district sales manager, has been appointed manager of the market research department.

St. Regis Paper Co., New York, N. Y., has appointed Budd E. Simon-ton as manager of the Oswego, N. Y., multiwall paper bag plant.

Caterpillar Tractor Co., Peoria, Ill., announces the promotion of J. M. Davies as associate director of research in administrative charge of the department, and R. C. Williams as assistant director of research in charge of tractor and earthmoving projects. The present assistant directors of research, L. A. Blanc, W. L. H.



J. M. Davies

Doyle, C. R. Maxwell and C. R. Schad have been assigned additional duties. Mr. Davies joined the company in 1925 as a member of the engineering laboratory at the San Leandro, Calif., plant. In 1933, he organized the laboratory of the engineering department at the Peoria plant. When the research department was formed in 1942, he became assistant director of the department.

New Holland Mfg. Co., Mountville, Penn., has just completed production

**Talk about Performance!**  
**CARVER PUMPS**  
*really deliver when jobs are tough*



**CARVER**  
*certified*  
**centrifugal**  
**pumps**

If you want a pump that primes lightning fast, that handles oceans of water at exceptionally high efficiency, and stands up easily under toughest operating conditions . . . the pump you want is a CARVER Certified Centrifugal Pump.

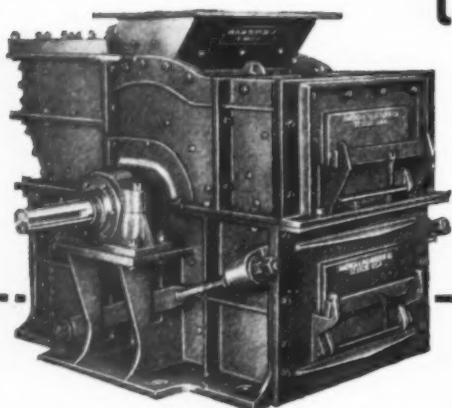
In every way they'll give you better pumping performance on the tough jobs—and the easy ones—because their modern streamlined design and construction gives you all these outstanding advantages:

- ★ High Capacity at high suction lift.
- ★ High Efficiency at high pressures and at slow speeds.
- ★ Non-Recirculating—no priming gadgets.
- ★ Life-Time Seal—wearing surfaces are almost diamond-hard.
- ★ Fewer Working Parts because of simple design.
- ★ Non-Clogging—streamlined design.
- ★ Performance of each pump is *certified*.

Capacities from  
3000 to 200,000  
G.P.H. Sizes  
1½" to 10". Ask  
for Bulletin 100.  
Carver Pump  
Co., Muscatine,  
Iowa.

**CARVER**  
**PUMPS** *Muscatine*  
*Iowa*



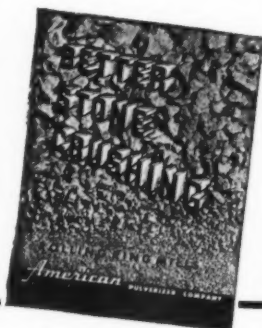


## the American "ACS" for Greater Production

High Tonnage Reduction with a  
Uniform Product and Controlled  
Fines.

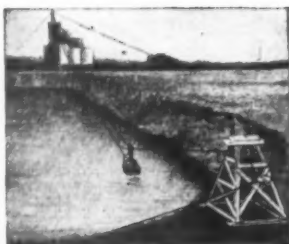
The American "ACS" Hammermill is bringing new efficiency to large scale crushing operations. The high tonnage "ACS" can be furnished with Center Feed for producing a finer product with a maximum of fines . . . or conventional Front feed to give a coarser product with minimum fines. Rugged sectional high-test cast-steel housing is extra-heavy and especially designed for severe, constant service.

Send for this new booklet . . .



**American** PULVERIZER COMPANY  
Originators and Manufacturers of  
Ring Crushers and Pulverizers  
1245 MACKLIND AVE.  
ST. LOUIS 10, MO.

## SAUERMAN *Long Range Machines*



Cableway in Deep Pit



Scraper Hauls Loose Rock

### Dig, Haul and Dump for a few cents a ton

**J**OBs of stockpiling or of digging from pits, ponds and banks are simplified by using a Sauerman Power Scraper or Cableway.

This equipment is very flexible and is readily adapted to any ground conditions. Both scraper and cableway machines cover large areas and move material from point to point at a rapid rate. First cost is reasonable, maintenance expense is small and the simplicity of operation permits easy one-man control of even the largest Sauerman installation.

There is a size and type of Sauerman machine to meet every capacity requirement from ten tons of material an hour to many thousand of tons a day. And each machine, large or small, offers greatest possible economy of power and labor in its appointed task.

WRITE FOR CATALOG

**SAUERMAN BROS., INC.**

530 S. CLINTON ST., CHICAGO 7, ILL.

of a 16 mm sound film in color on the new 13-ton 3030 double impeller breaker, as an industrial reporting and educational study of the mechanization of rock crushing operations.

Atlas Tool & Designing Co., Philadelphia, Penn., has changed its charter to the Atlas Chain & Manufacturing Co.

American Hoist & Derrick Co., St. Paul, Minn., has announced the appointment of William T. Kennedy as sales representative in the Southwest territory, with headquarters at Houston, Texas.

Allis-Chalmers Mfg. Co., Milwaukee, Wis., announces that William A. Roberts and William C. Johnson have been elected executive vice-presidents, respectively, of the tractor and gen-



William A. Roberts



William C. Johnson

eral machinery divisions, and that Walter Geist has been elected president for his sixth term. Other officers are J. A. Keogh, vice-president and comptroller; H. W. Story, vice-president and general attorney; W. E. Hawkinson, secretary and treasurer; E. H. Brown, vice-president in charge of engineering development; and James M. White, vice-president in charge of manufacturing. William D. Pretts, supervisor of passenger reservations in the traffic department, has been transferred to the mining section of the basic industries department. He will be succeeded by Don E. Mueller, formerly supervisor of passenger reservations in the passenger division.

General Electric Co., Schenectady, N. Y., has won the annual Associated Business Papers' Advertising Competition certificate award in Division 3, Machinery and Equipment, for the excellence of its industrial Diesel-electric locomotive campaign.

Timken Roller Bearing Co., Canton, Ohio, has opened a new branch plant in St. Thomas, Ontario, Canada, with John Jolly as general manager; Charles Wynn, assistant general manager; Jack McGinnis, production superintendent; Leonard Lewis, personnel director; Vaughn Courrier, works engineer; and Frank Whatmore, planning superintendent.

Air Reduction Sales Co., New York, N. Y., has appointed H. C. Wallace as manager of the Louisville district sales office, succeeding the late R. S. Moore, who died recently.

Ford Motor Co., Dearborn, Mich., has announced the appointment of William T. Gossett, vice-president and general counsel, as a member of the board of directors, succeeding Her-

man L. Moekle, who has resigned. No director has been elected to succeed the late Henry Ford. J. J. O'Neill has been named assistant manager of the fleet sales section of which S. M. Copland is manager.

Bucyrus-Erie Co., South Milwaukee, Wis., has appointed the Industrial Tractor & Equipment Co., Inc., Nashville, Tenn., and the Power Equipment Co., Knoxville, Tenn., as distributors.

Nordberg Mfg. Co., Milwaukee, Wis., has announced the appointment of Jack Grace to handle sales development for both the crusher and process machinery divisions.

R. G. LeTourneau, Inc., Peoria, Ill., has been awarded a sterling silver plaque by Associated Business Papers for outstanding achievement in industrial advertising in the machinery equipment division.

Euclid Road Machinery Co., Cleveland, Ohio, has appointed the Euclid-Chicago Co., Chicago, Ill., as distributor for northwestern Indiana, northern Illinois and southern Wisconsin. Principals of the company are Robert M. Jones and Horace K. Church. The service and parts department is in charge of Harvey Landmeier, and Jack Wathen is office manager.

Detroit Diesel Engine Division, General Motors Corp., Detroit, Mich., has set up at its factory in Detroit a completely equipped school for training GM Diesel mechanics in the operation and servicing of the Series 71 engine. Detroit Diesel distributors and dealers may, upon proper application, send their service personnel to the factory for a training course in basic Diesel mechanics.

International Harvester Co., Chicago, Ill., announces that Giles C. Hoyt and General Levin H. Campbell, Jr., have been elected executive vice-presidents. William E. Worth, formerly executive vice-president, has retired after 27 years of service with the company; Ralph C. Archer, formerly vice-president in charge of the farm tractor division, has been named vice-president in charge of the farm implement division, succeeding Robert P. Messenger, who becomes vice-president in charge of foreign operations in place of Mr. Hoyt. Michael J. Graham, formerly assistant to the vice-president in charge of manufacturing, has been appointed general manager of the farm tractor division and succeeds Mr. Archer as executive head of that division. R. G. Greer, formerly manager of the Louisville, Ky., general line branch, has been appointed assistant Eastern district manager, motor truck division; and R. H. Curll, formerly retail manager at Burlington, Vt., has been named assistant manager at Harrisburg, Penn., motor truck branch.

Joseph T. Ryerson & Son, Inc., Chicago, Ill., has announced the appointment of William G. Findlay as manager of the Pittsburgh plant, succeeding Howard L. Robinson who has been given a special assignment at the



## DENVER

### "SUB-A" FLOTATION CELLS

Produce the ideal  
flotation condition

for maximum grade and maximum recovery

Write for BULLETIN F11-B



*"The firm that makes its friends happier, healthier, and wealthier"*

**DENVER EQUIPMENT COMPANY**  
P. O. BOX 5268 • DENVER 17, COLORADO

NEW YORK CITY 1, N. Y. 4114 Empire State Bldg.  
CHICAGO 1, 1123 Bell Bldg. 301 N. Michigan  
MEXICO D. F. Edificio Pedro de Santa Gante 7

TORONTO, ONTARIO 45 Richmond Street W.  
VANCOUVER 8, C. 305 Credit Pacific Bldg.

LONDON, EC2, ENGLAND Salisbury House  
JOHANNESBURG, S. AFRICA 8 Village Road  
RICHMOND, AUSTRALIA 530 Victoria Street

## UNIVERSAL VIBRATING SCREENS

give best results

Hundreds of operators know the all-around efficiency and economy of the UNIVERSAL and profit by it! It will pay you to investigate this pioneer Vibrating Screen before you buy.

There's a UNIVERSAL to fit your particular requirements.

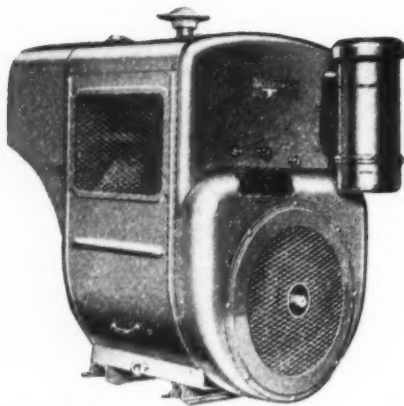
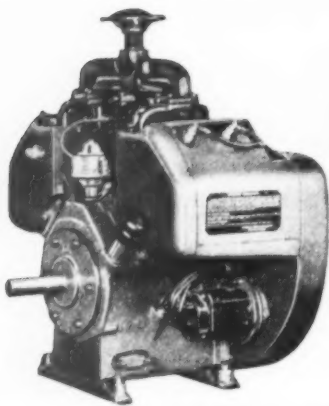
Write for Catalog No. 107 on Screens and Screening.



Type  
"MR"  
42"x96"  
Double  
Deck

★ ★ ★ **UNIVERSAL VIBRATING SCREEN CO.** ★ ★ ★  
RACINE - WISCONSIN





## Let this 20-Horse Team Handle Your Heavy-Duty Power Jobs

Turning up 20.5 hp. at 2200 R.P.M. the Model VE-4 WISCONSIN Standard Air-Cooled Engine (left) and the Model VE-4 Complete Power Unit (right), can always be depended upon for continuous, heavy-duty operation in any kind of service, on any kind of equipment within their power range.

Positive, trouble-free AIR-COOLING; dynamically balanced crankshaft mounted on tapered roller bearings, front and rear; extra-long connecting rods; light weight pistons . . . these are features that you can bank on for top performance.

Specify Wisconsin Air-Cooled Engines for YOUR equipment  
... for most hp.-hours of service, at the lowest overall cost.

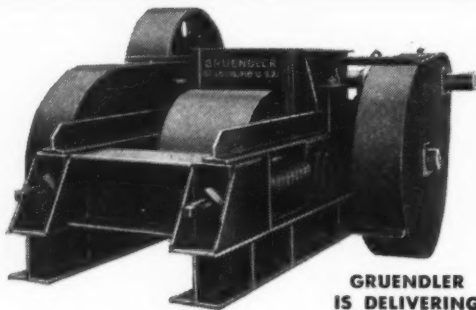
### WISCONSIN MOTOR Corporation

MILWAUKEE 14, WISCONSIN

World's Largest Builders of Heavy Duty Air-Cooled Engines

For Maximum  
Reduction, Economy,  
Production, and Safety

### GRUENDLER ROLL CRUSHERS



GRUENDLER  
IS DELIVERING

Five Models—Nos. 18, 24, 30, 40, and 56 in a variety  
of stationary and portable designs.

WRITE FOR CATALOG NO. 700



Built to the highest standards of quality and precision, includes enclosed all-gear drive,—solid manganese shells,—X-braced frame,—roller bearings throughout,—designed to take many times as much load as it will ever receive in service. You may choose smooth, corrugated, step tooth or a combination of any of these rolls in the proper diameters to produce the desired stage of reduction in combination with jaw or other primary crushers.

MFGRS. of JAW CRUSHERS and HAMMERMILLS

# GRUENDLER

CRUSHER & PULVERIZER CO., DEPT. R.C., 2917 N. Market, St. Louis 6, Mo.

Cleveland plant. C. W. Schoenberg is the new manager of the work order department at Chicago.

Joseph T. Ryerson & Son, Inc., Chicago, Ill., recently held open house at the new Los Angeles plant which has been in operation since October, 1946. Hosts were F. A. Purdy, plant manager, and T. L. Kishbaugh, assistant manager. Executives who attended the opening were Everett D. Graff, president; Harold B. Ressler, vice-president and general manager of sales; Ainslie Y. Sawyer, vice-president; William Seymour, Jr., assistant vice-president; and Thomas Z. Hayward, assistant general manager of sales.

Four Wheel Drive Auto Co., Clintonville, Wis., has elected Robert A. Olen, general manager, as a member of the board of directors to succeed the late Charles Hagen. Mr. Olen has been with the company since 1924. Appointment of the M. B. Salisbury Co., Inc., Topeka, Kans., as distributor for that portion of Kansas east of and including the counties of Republic, Cloud, Clay, Geary, Lyon, Coffey, Allen, Neosho and Labette, has also been announced.

Chase Bag Co., Chicago, Ill., recently received an award from the Chicago Federated Advertising Club for its advertisement publicizing the training program for ex-servicemen rehired by the company.

Olin Industries, Western Cartridge Co. Division, East Alton, Ill., announces that Fred Olsen, chief of research and technical development since 1929, has been elected a member of the board of directors.

Wico Electric Co., West Springfield, Mass., has announced the opening of a new sales office in Milwaukee, Wis., with Donald G. Forbes as manufacturing division sales engineer, and Orville H. Tift as trade-sales engineer.

Commercial Shearing & Stamping Co., Youngstown, Ohio, announces that John E. Wallis has been appointed manager of pressed steel sales, succeeding Howard S. Thompson who has been promoted to assistant vice-president in charge of sales promotion.

Cement Mill Equipment Co., Detroit, Mich., announces the removal of its offices to Franklin, Mich., a suburb of Detroit.

Link-Belt Co., Chicago, Ill., has appointed Franklin C. Schimpf as controller of the company. He has been chief accountant of the Dodge and Ewart plants in Indianapolis since 1937, and assistant secretary of the company since 1942. C. R. Heller, Washington representative, has been placed in charge of the sales office which has been re-established in Washington, D. C.

Goodyear Tire & Rubber Co., Akron, Ohio, has appointed Howard L. Ginnaven as general superintendent of the plant in Wolverhampton, England. He will succeed H. A. Brittain who is returning to Akron on a new assignment.

## New Incorporations

**Molo Sand & Gravel Co.**, Dubuque, Iowa, has been incorporated. Authorized capital stock is \$150,000. Officers are Bart L. Molo, president and treasurer; Harold E. Molo, vice-president and secretary.

**Beyer Crushed Rock Co.**, Kansas City, Mo., has been organized to quarry and mine crushed rock. Authorized capital is 2000 shares par value \$100 each; commence with \$200,000. Incorporators are J. G. Hoover, L. Marino, E. J. Flinn, R. P. Lyons and J. Hoover. Attorney is Arthur L. Ross, 2002 Fidelity Bldg., Kansas City.

**Western Lime Co.**, LaConner, Wash., has filed articles of incorporation, with a capital of \$50,000. Resident agent is John Koetje of LaConner.

**Ralph Rogers & Co., Inc.**, Wilmington, Del., has been granted articles of incorporation to engage in the crushed stone business. Capital is 30,000 shares of no par value.

**Winfield Stone Co.**, Winfield, Kans., has been issued a charter to establish a stone crushing plant for production of agricultural limestone. Authorized capital is \$20,000. R. M. Mullikin was named resident agent.

**Congaree Quarry Co.**, Columbia, S. C., has been incorporated to engage in the rock and stone business with a capital stock of \$50,000. Walter Lam-bert is president of the company.

**Capital Sand & Gravel Co.**, Madison, Wis., has been organized to manufacture, process, buy and sell building materials of all kinds, with a capital of 1000 shares at \$100 per share. Incorporators are J. A. Gallagher, H. M. Nelson and L. C. McGann.

**Humtuls Sand & Gravel Co., Inc.**, Aberdeen, Wash., has been organized with a capital of \$20,000. A. M. Abel, Aberdeen, is the agent.

**Odum Concrete Products, Inc.**, West Frankfort, Ill., has been incorporated with 350 shares of common stock, par value \$100. Incorporators are Rannie M. Odum, Irving E. Odum, and Katherine Odum. Will manufacture concrete block and other concrete products. Frank E. Trobaugh is the correspondent.

**Endicott Block & Supply Co., Inc.**, Endicott, N. Y., has been authorized to issue 400 shares of stock with no par value. John J. Dapolito and Joseph Baldoni hold 199 shares each; Roco V. Batista and Anthony Serafini hold one share each.

**Sun Prairie Ready-Mix, Inc.**, Sun Prairie, Wis., has been organized to manufacture and deal in ready mixed concrete of all types, building materials and supplies and construction business. Capital 300 shares, par value \$100. Incorporators are Frank Stegerwald, Henry Schasse and Robert Sumnicht. Attorney is Robert Arthur, Madison, Wis.

**Newburgh Concrete Block Co.**, Go-

shen, N. Y., has been organized by James, Charles, Gus, and Nicholas Cimorelli and Dominick Iannone, Jr.

**Caldwell Cinder Block Co., Inc.**, Lenoir, N. C., has been incorporated to deal in concrete building block. Authorized capital stock is \$100,000. Subscribed stock of \$300 was taken by Carl H. Long and Louis R. Long of Fries, Va., and Virginia and J. D. Lindsey of Lenoir.

**Buffalo Gravel Corp.**, Buffalo, N. Y., has been granted a building permit to erect a concrete mix plant at a cost of \$50,000.

**Newark Concrete Co.**, Newark, N. J., has filed a charter with the State of Delaware to deal in lime, cement, etc., with a capital of \$100,000. Principal office is in Newark.

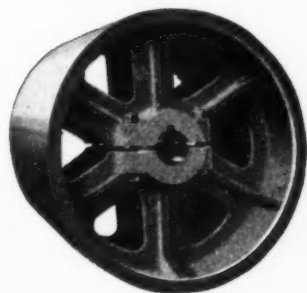
**Rib Mountain Granite Co.**, Wausau, Wis., has been authorized to increase stock from 500 shares, par value \$100 to 750 shares with a par value of \$100.

**Pioneer Sand & Gravel Co.**, Rice Lake, Wis., has been incorporated to buy, sell and deal in concrete and concrete products, etc., with a capital of 100 shares, no par value.

**Collins Sand & Gravel Co., Inc.**, Milford, Conn., has received articles of incorporation. Amount paid in cash, \$5000; amount paid in property, \$10,000; number of shares, 1500 with par value of \$10. George F. Collins, president and treasurer; Herbert R. Elker, vice-president and secretary; A. F. Maxwell, assistant treasurer.



Completely split pulley



Extra heavy conveyor pulley

# High test cast iron pulleys in all sizes and types

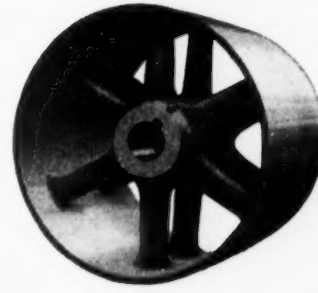
**JONES** cast iron pulleys are true running — they permit higher speeds — no bushings and they can't fall apart — they don't rattle and they look better on most machines.

These pulleys are machine molded, poured of high test cast iron, and are accurately finished and balanced. Multiple piece pulleys, rubber covered pulleys and flywheels can be furnished.

**W. A. JONES FOUNDRY & MACHINE CO.**  
4447 Roosevelt Road, Chicago, Illinois



Single arm solid pulley



Double arm pulley

# Jones

HERRINGBONE — WORM — SPUR — GEAR SPEED REDUCERS • PULLEYS  
CUT AND MOLDED TOOTH GEARS • V-BELT SHEAVES • ANTI-FRICTION  
PILLOW BLOCKS • FRICTION CLUTCHES • TRANSMISSION APPLIANCES



# TWICE THE SERVICE with Hendrick Loading Screens



Hendrick Perforated Metal Plate is also ideal for vibrating and shaking screens

Here's a remarkable record for long service of loading screens for removing fines. One plant, that kept accurate records, averaged 17,000 tons on any ordinary type of screen before it had to be replaced. Screens of Hendrick perforated metal plate, hardened by Hendrick's heat-treatment process, averaged 35,000 tons on the same job.

Made of high carbon steel, an outstanding advantage of Hendrick perforated metal plate screens is that there is no spreading of openings, even after long use. Hendrick perforated plate is supplied in any desired size and shape of opening, in any specified gauge. Write for detailed information.



Perforated Metals  
Perforated Metal Screens  
Architectural Grilles  
Mitco Open Steel Flooring,  
"Shur-Site" Treads and  
Armorgrids

## HENDRICK

*Manufacturing Company*

47 DUNDAFF STREET, CARBONDALE, PENNA.

Sales Offices In Principal Cities



**FOR** 75 years Ehram has engineered and built grain conveying and elevating equipment. Feed mills and elevators long have profited by using Ehram products.

Experienced Ehram engineers can solve your bulk materials handling problem in a modern, scientific manner. Write us. **EHRAM**

**THE J. B. EHRAM & SONS MFG. CO.**

ENTERPRISE, KANSAS

Engineers, Machinists, Founders and Metalworkers



Blaw-Knox No. 667 rated 1/2 cu. yd. narrow hard digging bucket. Two-line lever arm type with counterweights.

**THE BUSINESS END  
OF YOUR CRANE INVESTMENT**

So, to insure the maximum returns on this investment, your bucket must get the most work done with the least crane time... From over 100 types and sizes of Blaw-Knox Buckets there's one that's right for your operations—it can be found in Blaw-Knox Catalog #2076.

**BLAW-KNOX DIVISION**

of Blaw-Knox Company

2035 Farmers Bank Bldg., Pittsburgh 22, Pa.

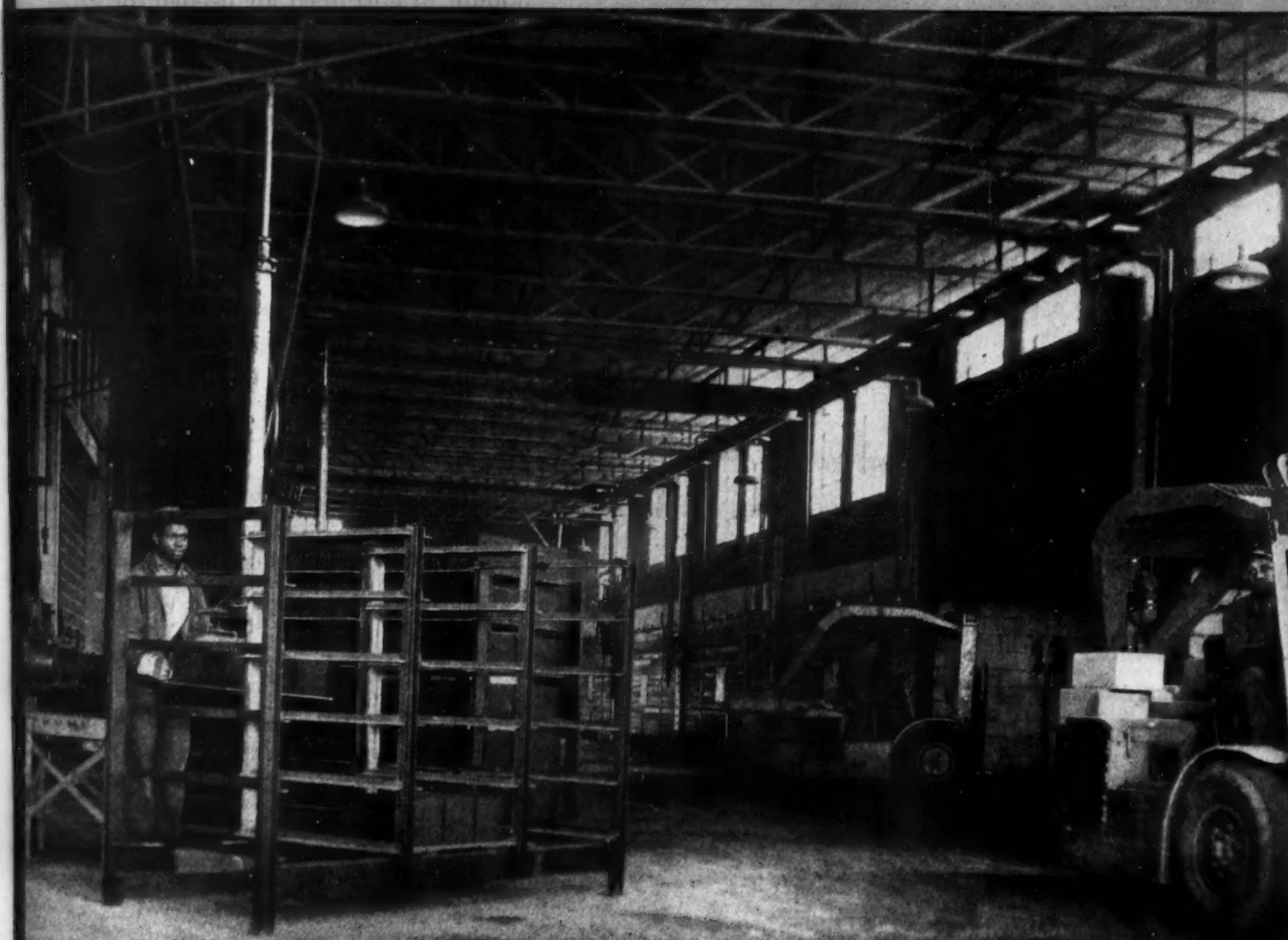
YOUR GUIDE TO  
PROPER BUCKET  
SELECTION



**BLAW-KNOX BUCKETS**

# CONCRETE PRODUCTS

CONCRETE UNITS • READY-MIXED CONCRETE



Modern block plant of  
Domine Builders Supply Co.,  
Inc., Rochester, N.Y.

A SECTION OF ROCK PRODUCTS



# Why is Duraplastic Cement being specified more and more

By

*Architects, engineers, contractors, dealers,  
ready-mix operators and concrete products makers*

For

*Paving, sidewalks, foundations, floors and walls—  
plaster, stucco, pump-crete, gunite and slip-form work—  
concrete block, pipe, drain-tile and other products*

?

*Here are 5  
Quick Answers:*

**1.** Complies with ASTM and Federal Specifications. Provides the proper amount of entrained air needed for satisfactory field performance.

**2.** No extra cost. Sells at the same price as regular cement. Calls for no additional materials.

**3.** Better concrete. Makes concrete more workable, more plastic and more uniform.

**4.** More durable concrete. Fortifies the concrete against freezing and thawing weather. Renders paving concrete highly resistant to scaling action of de-icing salts.

**5.** Makes better concrete block. Reduces breakage, improves appearance, lowers water absorption and generally increases strength.

Send for further information. Write Universal Atlas Cement Company, (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

**OFFICES:**

Albany, Birmingham, Boston, Chicago, Cleveland, Dayton, Des Moines, Duluth, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

CP-D-51

## ATLAS DURAPLASTIC

AIR-ENTRAINING PORTLAND CEMENT

**MAKES BETTER CONCRETE AT NO EXTRA COST**

TRADE MARK REG.  
U. A. C. CO.



# NEW SPECIAL DUMP BODY HAULS CONCRETE

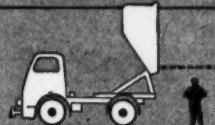


**EASIER  
CHEAPER  
FASTER**

Low Center  
of Gravity



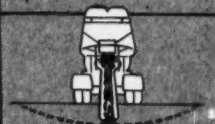
High Point  
of Discharge



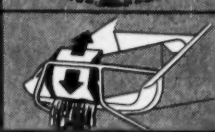
Chute Unfolds  
Easily



180°  
Horizontal  
Chute Swing



Positive  
Cut-Off Gate



**A** new ready-mix team — Air-Entrained Concrete and the DUMPCRETE — is cutting costs for ready-mix men all over the U. S.

With air-entrainment, the tested and proved method of bettering concrete, you haul *precision-mixed* concrete from central plant up to 45 minutes (and more) without agitation . . . yet neither segregation nor bleeding is a problem.

Thus you can now have *low-cost* ready-mix delivery with the Dumpcrete — specially designed to carry concrete without agitation.

The new, economical Dumpcrete loads easily, speeds through traffic and dumps quickly.

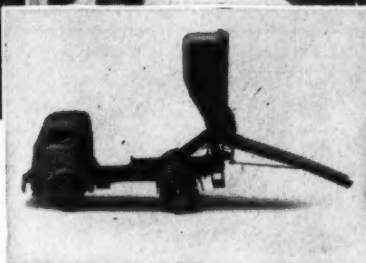
So much time is saved that the Kolinski Concrete Company, Milwaukee, reports, "We deliver about one load a day more concrete in our Dumpcretres than in our mixer trucks" . . . Jim Nicholson of Toledo says, "Ten to twenty percent more production than with truck mixers."

These progressive ready-mix men produce more . . . at lower cost, because the Dumpcrete costs *less to buy, less to operate, and less to maintain.*

If you want to be able to meet the competition of the future with quick, low-cost concrete delivery, send for complete information. Tear out the coupon now, before you forget.

## 3 SIZES NOW AVAILABLE

The Dumpcrete is built in 2, 3, and 4 cubic yard sizes. All can be mounted on standard truck chassis.



• Full vertical dumping angle for clean discharge.



• Body design and high point of discharge are ideal for hauling and stock piling sand, gravel, earth and coal.

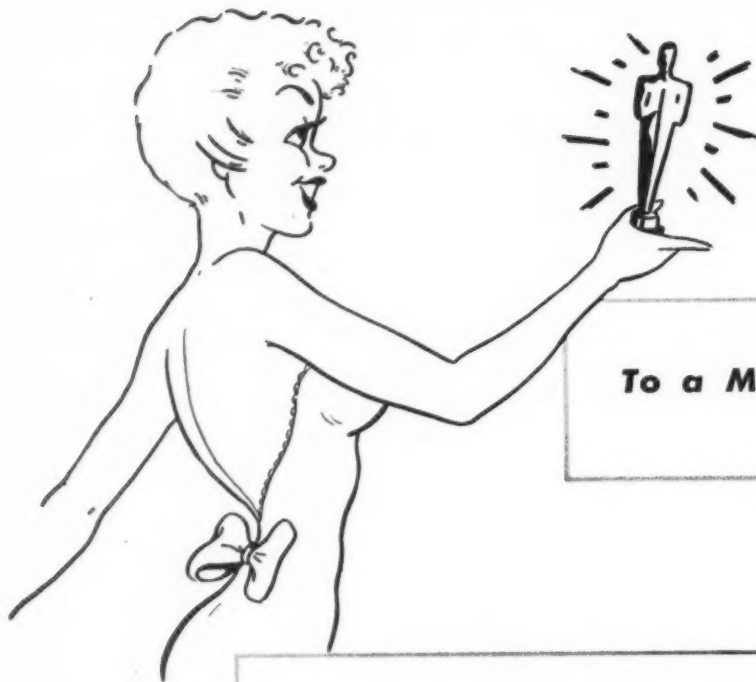


DIVISION OF  
**MAXON CONSTRUCTION COMPANY**  
415 TALBOTT BUILDING • DAYTON 2, • OHIO

Send me facts on how the Dumpcrete is now being used successfully.

Name \_\_\_\_\_  
Firm \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_





To a Movie Star, It's the "Oscar"

To a Truck Mixer, It's



To a motion picture star, the Academy Award "Oscar" represents the pinnacle of achievement.

In the field of ready-mix concrete, the award of the Truck Mixer Bureau's rating plate is equally indicative of achievement. For the award of this plate means that the mixer has successfully met the standards set up by the Bureau for your protection. Drum capacity is *exactly* that stated on the plate. It's your protection against "out-law" sizes . . . your guarantee of accuracy.

Remember, when you see the Bureau rating plate on a truck mixer, you can buy with confidence . . . operate with accuracy.

## Truck Mixer Manufacturers Bureau

Affiliated with The National Ready Mixed Concrete Association

BLAW-KNOX DIVISION  
Pittsburgh, Pa.

CONCRETE TRANSPORT MIXER CO.  
St. Louis, Mo.

RANSOME MACHINERY COMPANY  
Dunellen, N. J.

CHAIN BELT COMPANY  
Milwaukee, Wis.

THE JAEGER MACHINE COMPANY  
Columbus, Ohio

THE T. L. SMITH COMPANY  
Milwaukee, Wis.

# Joining Large Concrete Pipe With Air Gun

**Tight concrete pipe connections  
are made with the use of a special  
air gun to "shoot" grout into joints**

**By W. B. LENHART**

**M**ANUFACTURERS of concrete pipe will be interested in a new development—the use of a small air gun for joining concrete pipe.

In Tacoma, Wash., the city engineering department had to lay three miles of 48-in. and 54-in. dia. concrete pipe in a rather flat area and where the pipe would be submerged from 5 to 7 ft. below the normal water table. The sewage flowing through this pipe had to be delivered by gravity to a pumping plant already in existence. Infiltration of surface water into the pipe had two serious objections here: (1) it would overload the pipe's capacity; and (2) it would mean addi-

tional liquid to pump and naturally at additional cost. Previous infiltration tests of concrete pipe in the area indicated that the hand-made, mortar joint used for connecting up the pipe was the major cause of surface waters entering into the system. C. S. Seabrook, sewer engineer, recalled that Gunitite had been tried for this work but that type of equipment was too costly and threw far too much concrete for the problems at hand. Recalling that Ben Nickolson, a Seattle engineer, had done some experimental work along this line, he contacted Mr. Nickolson to collaborate in developing the idea. Mr. Nickolson



Operator in trench shooting grout into tongue-and-groove concrete pipe joint. Sealed joint may be seen, to the right

is the inventor of the process, but Mr. Seabrook was the spark plug in its development. Patents have been applied for and Mr. Nickolson is planning on developing and manufacturing the machine for general use.

The equipment works on the same principle as the Gunitite process except that air jets entering tangentially into the bottom of the portland cement container activate and force the dry cement through a 1-in. dia. hose to the nozzle. The whole assembly is small and weighs in the neighborhood of 200 lbs. when empty. It is mounted on two small wheels and can be moved around like a small hand truck. The cement and fine sand are previously mixed and screened just before putting the mix into the apparatus so as not to plug up the delivery lines. The container holds 5 to 6 buckets full of dry grout. Air is supplied by a small portable compressor at 35 lbs. pressure. Water is added at the nozzle. About 33 cu. ft. per minute of air is used. The whole assembly is usually wheeled along the top of the concrete pipe already laid. It actually takes two men to run the rig, but in Tacoma union rules require four men.

At the time of inspection (by the author), a 54-in. concrete pipe line was being laid. It took less than five minutes for the operator to connect up a joint. He first washed out the joint with water using the same spray nozzle used for the cement, then without any disconnections he started shooting the grout into the joint. Most of this work was at right angles to the center line of pipe but at the bottom he placed an obstruction under the pipe and in such a manner that

*(Continued on page 137)*



Shooting grout into bell joint. Where bell pipe is laid a platform is built over the pipe but on tongue-and-groove pipe, the grouting device is wheeled along the top of the pipe



# Material Handling

By BROR NORDBERG



Exterior view of concrete products plant showing large stockpile of cinder aggregate and arrangement of elevators to handle materials separately

## ADVANCED METHODS of Aggregates Handling and Concrete Proportioning

**Domine Builders Supply Co., Inc., plant has curing rooms designed for high degree of heat insulation and electrically propelled weigh hoppers**

**M**ECCHANICAL and automatic material handling and plant operation are highly developed in the new concrete masonry manufacturing plant of Domine Builders Supply Co., Inc., Rochester, N. Y., which was designed to eliminate manual operations insofar as practicable while effecting a high degree of product

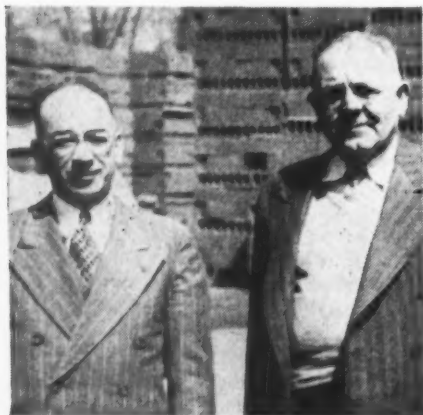
quality through control of manufacture.

Domine Builders Supply Co. has had a long history in the manufacture of concrete products, having incorporated back in 1913 to produce concrete roofing tile. Concrete masonry units were first manufactured, by hand, in 1923 at the time the company entered the building supply business. A Besser power tamper went into production in 1932 and the first of two Besser Vibrapacs was installed in 1941. The new plant went into full production late in 1946, and is the product of an exhaustive study of other large plants over the country, which was pointed toward the adoption of methods to eliminate practices which had proven uneconomical in the earlier plants of the Company.

The plant that was operated prior to 1946 employed narrow-gauge transfer cars for the handling of concrete units; used sacked cement and depended upon a great deal of hand labor in the handling of aggregates, cement and for the handling and loading of concrete units. It had little provision for accuracy in the proportion-

ing of concrete materials and no means for the removal of objectionable iron from cinders, as required by today's postwar standards, and its capacity and manufacturing flexibility were far from adequate. Capacity was 6000 8-in. equivalent units per day, at the rate of 750 per man-day.

The new plant, as seen in the accompanying layout drawings, is high-



Harvey H. Black, secretary and general manager, left, and H. P. Domine, president, treasurer and founder



Fork lift truck loading cubed block on to truck

ly mechanized. It has provided locker rooms and other facilities to improve working conditions for employees. The design has anticipated the utilization of cinders and heavy aggregates and their availability either by rail or truck. Accurate weigh batching equipment and bulk cement have been incorporated into the plant, high temperature curing has been adopted, and the handling of concrete units is by power lift trucks, which also load cubed units on to trucks for delivery. With a capacity of 12,000 8-in. equivalent units per day (9½-hr. shift), the plant is producing 1000 units per man-hour, a third increase in labor utilization, and, through the adoption of cubing which is the only manual operation in the plant, the efficiency of the delivery trucks has been increased 25 per cent, through decreased loading time.

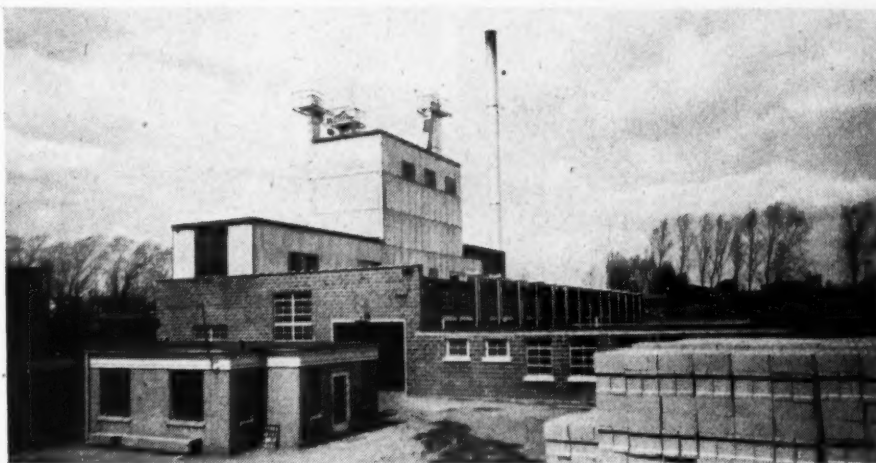
Quality of product, as well, has been improved through accurate control of aggregates, mechanical separation of iron from cinders, uniform weighing and curing. All sizes of regular concrete units from 2- to 12-in. are produced, as well as header block, bull-nose, chimney block, sash block and concrete brick, which are made 32 to a pallet.

## Plant Layout

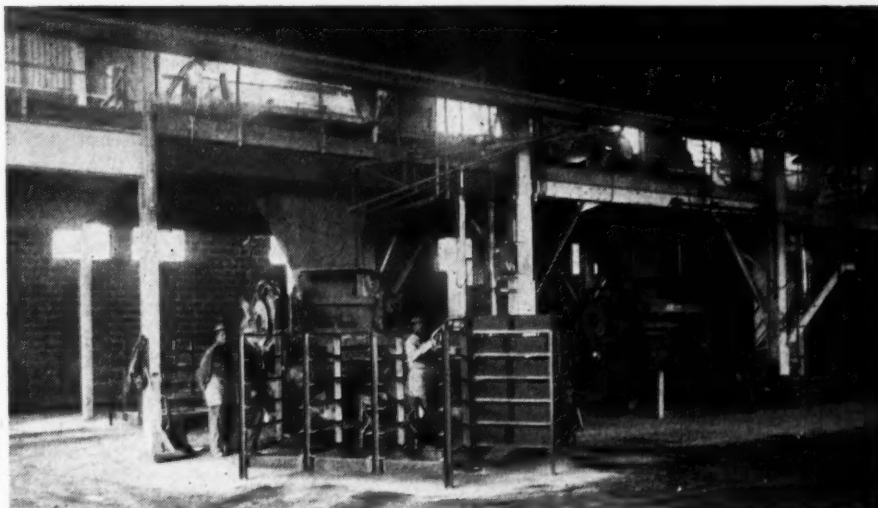
The plant is a building 140- x 150-ft. including seven curing rooms, with concrete floor throughout, and is laid out for future expansion. The building is of concrete slab roof and I-beam construction with cinder block side-walls, and was designed to house the equipment considered essential for efficiency in concrete block manufacture, rather than the reverse which often seems to be the case. Adequate room was provided for ready maneuverability of power lift trucks within the plant and for cubing of units behind the block machines within the building. Curing rooms are just opposite the block machines, which are charged from overhead mixers; a locker room adjoins the curing rooms and a boiler room and cinder processing plant are incorporated into the main plant.

## Aggregates Handling

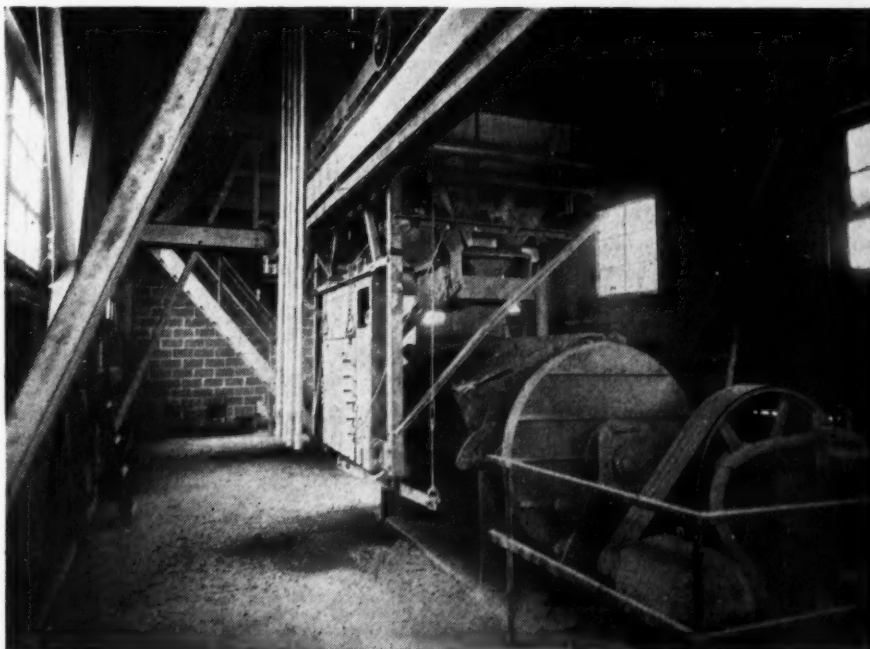
The entire plant operation is up-to-the-minute but the material handling and mechanical features of the plant are of special interest, being far advanced for the concrete masonry industry. Obviously, the company has recognized that theirs is a business of material handling wherein lies probably the greatest opportunity for cost reduction. The entire raw material handling arrangement for aggregates and bulk cement was designed by Butler Bin Co., supplier of the bins, hoppers and batching equipment. Having first completed the basic design, local architects Firestone and Lorscheider were called upon to complete the overall layout.



Overall view of new plant. Curing kilns are to the right and office in lower foreground. Note separate elevators for cement, sand and gravel, and cinders



Interior of plant showing block machines in relation to mixing floor. Note runways around back of plant where units are cubed



Travelling weigh batcher serving two 50-cu. ft. mixers





Cubing of block is done behind the block machines. Fork-lift trucks are used to handle block to curing kilns

A single Butler five-compartment bin, of 303-cu. yd. capacity, including 650 bbl. of cement in one compartment, comprises the main superstructure of the plant, it being served by separate enclosed bucket elevators for bulk cement, sand and gravel and processed cinders respectively.

### Cinder Processing

The cinder processing plant adjoins the boiler plant so that a single bucket elevator and either truck or rail hopper supply raw cinders and coal to each respectively through manipulation of a flop gate. Cinders are received either by truck or hopper-bottom railroad cars into a hopper, and a short belt conveyor is the means of transfer to the bucket elevator. When coal is handled, the elevator transfers to an overhead belt conveyor filling a 100-ton bin in the boiler room.

Design of the cinder processing plant provides for magnetic separation of iron and its mechanical disposal, and for stockpiling of processed cinders for ageing during the winter months. Cinders are available in abundant supply during the winter months.

Some 2 cu. yds. of magnetic tramp iron per railroad car of cinders are removed by a Ding's magnetic head pulley on the belt conveyor at the boot of the elevator. These rejects are separately elevated and conveyed by a Syntron electric feeder into a reject hopper, from which dump trucks are loaded at intervals for disposal.

Cinders are sized over a 3- x 10-ft. double-deck Seco vibrating screen operating in closed circuit with 16- x 30-in. New Holland rolls, oversize being returned to the track hopper belt conveyor. The screen carries ¾-in. cloth on the top deck, which merely serves to split the load, and sizing is done over ¾-in. square openings on the bottom deck. Plus ¾-in. passes through a chute into the crushing rolls for reduction followed by re-screening. One size of cinder has proven to have

excellent gradation, making unnecessary the use of separated sizes.

Sized cinders drop into a hopper under the screen, from which they feed out to a short belt conveyor which transfers through a chute to a second belt conveyor that discharges into the boot of a bucket elevator, 81 ft. centers, filling the 100-cu. yd. compartment for cinders in the main plant bin.

The transfer of cinders from the elevator head into the bin is by way of a short belt that transfers to a longer, reversible belt conveyor on a slight incline. When the bin is full, the belt conveyor is reversed, carrying the cinders on the downgrade to a spout which fills a 35-cu. yd. truck-loading bin outside the plant. Dump trucks haul the processed cinders to stockpiles for ageing and later reloading by portable conveyors for return into the plant bin. Bin signals indi-

cate when the bins are full, and live steam jets are provided to prevent freeze-ups in the various aggregate bins. One of the live steam lines is inside the spout from which the truck-loading bin is filled.

### Aggregate and Cement Handling

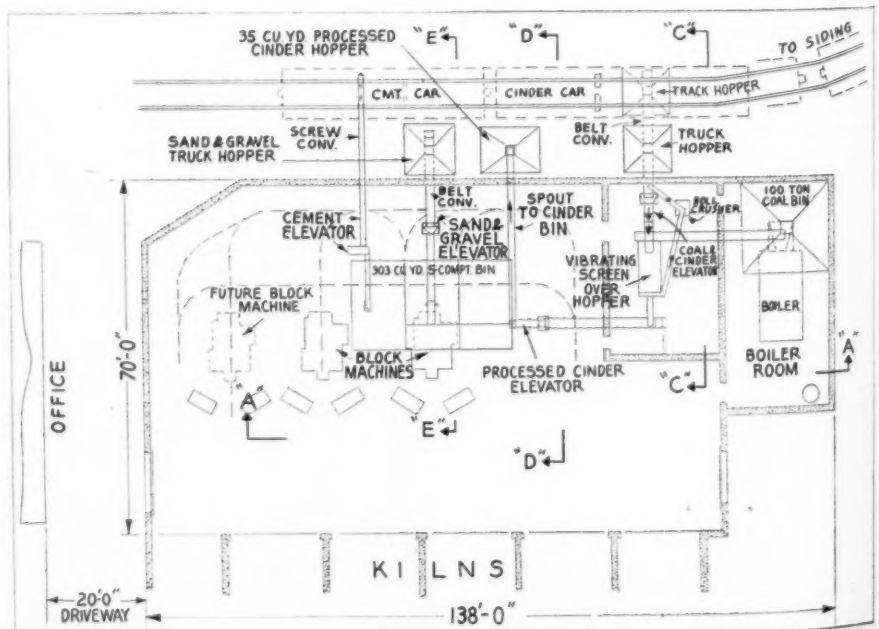
Separate track and railroad hoppers and an enclosed bucket elevator, 79 ft. centers, deliver sand and gravel into bin compartments of 100 cu. yd. total capacity, the transfer at the elevator head being done by belt conveyor.

Standard portland cement is used exclusively and it is handled by the conventional enclosed screw conveyor and bucket elevator into the cement compartment. The bin is equipped with automatic bin level signals, and is fitted with attachments to introduce compressed air as needed to stimulate flow out through a radial vane feeder for batching.

### Batching

Equipment for block manufacture consists of two Besser Vibrapac machines, with pneumatic off-bearers, each served by an overhead 50 c.f. Besser mixer. Batching is done by an electrically-propelled weigh hopper, with automatic stops, that travels on rails which are extendible for future plant expansion. Batching of cement is accurate and automatic. A push button actuates the flow of cement into a screw conveyor which travels to accurately proportion the set amount into the travelling batcher. Aggregates are charged into the weigh batcher by lever-operated clam-shell bin gates.

Domine is actively experimenting with curing methods and the process



Layout of block manufacturing plant in plan

## MATERIAL HANDLING

now in use, like in most of the new large plants, is subject to change according to findings based upon research. Its layout of curing rooms has provided for future developments that may alter present curing concepts but the rooms have been designed to accommodate large racks, are of extraordinary sturdy construction, well-insulated and geared to anticipated capacity.

### Curing Room Construction

There are seven rooms, side by side, open only at the charging end. Each measures 6 ft. 8 in. high, 18 ft. 6 in. in width, and is 52 ft. long. Total capacity is 21,000 units, each room accommodating 28 racks that hold 36 pallets each, three 8-in. units per pallet. Capacity was designed to permit leaving the units in the curing rooms for nearly two full days, the company believing that it is desirable not to remove them too quickly.

Structurally, the rooms are of double wall construction. Outside walls are of 8-in. cinder block on the outside, with an 8-in. air space and an

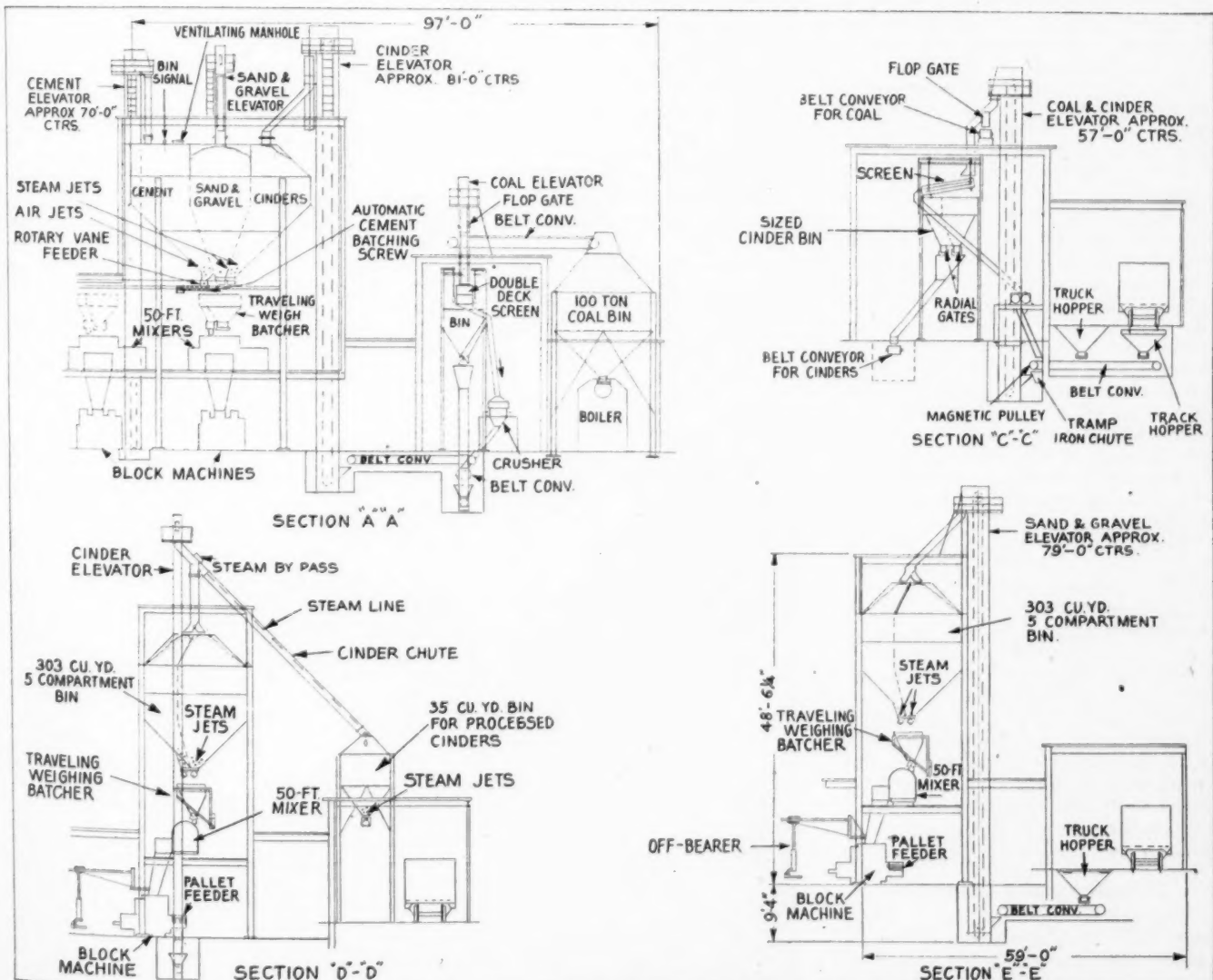
inner wall of 8-in. sand and gravel concrete units. Cinder block were used for their high insulating factor and the denser heavy units were laid in the inner walls where low absorption is desired. Cores in the inner walls were filled solid with poured concrete, vertical reinforcing rods on 16-in. centers being placed to tie in with the roof, thus completing a rigid concrete structure. The roof is of 8-in. reinforced sand and gravel concrete slab construction covered with a 20-in. layer of loose cinders, over which has been laid a 2-in. cinder concrete slab covered with roofing material. Partition walls are of 12-in. sand and gravel masonry and the wall adjoining the locker room is the same as the outside walls. The doors are of creosoted lumber facing on a 2 x 4 frame, with a 2-in. air space in the door itself fitted with gaskets for a tight seal when drawn up by clamps.

A high degree of heat insulation was the objective of the curing room design, and particularly in the roof where the heat that has penetrated will be retained in the roof itself to

minimize extreme temperature fluctuations. A constant roof temperature was also considered desirable to minimize movement from expansion and contraction which, if extreme, might damage the partition walls. And, of course, fuel conservation and constant curing conditions were objectives. Under average conditions of curing at 190-200 deg. F., when the source of heat has been shut off the temperature drop within the closed rooms is in the range of 4 to 5 deg. F. per hour.

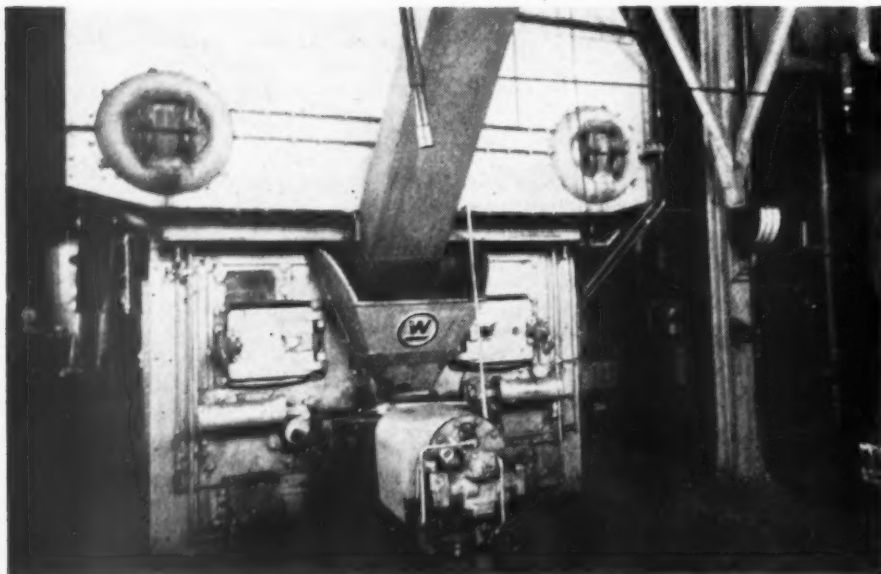
### Curing Cycle

As mentioned earlier, the curing cycle is subject to change, based upon findings of the industry and the company itself in its work with a regulation-size control kiln. The present cycle is to introduce live steam to raise the temperature to 190 deg. F., which is held (checked by thermometer) for four hours, followed by a 30-hr. soaking period after the steam is cut and with the doors closed. Units are left in the kilns almost 48 hr. before removal. Two hours before removal, the doors are raised 2 in.



Elevation of plant as designated on accompanying plan layout. Elevator spouts for sand and gravel have been replaced by short belt conveyors since layout was made





Stoker-fired steam boiler supplies steam for all purposes

from the bottom and the steam and hot air are withdrawn by suction fan. A single fan, with a 4- x 4-ft. common duct across the back ends of all the rooms, is capable of exhausting the rooms in 30 minutes. The soaking period averages 35 to 40 hr., all told, with two block machines in operation on a single shift. Normal temperature air is drawn through the rooms for two hours to complete the cycle.

One of the seven curing rooms is a control unit, with instruments for the measurement of temperature at various locations and for measurement of relative humidity. This kiln is equipped the same as the others, with steam released through perforations in 2-in. live steam lines lengthwise of the room and located at the lower left hand corner and upper right hand corner to impart a whirling motion to the steam as it enters the room. In addition, this room has radiation pipe for the study of the effects of dry heat application in conjunction with live steam moist curing at elevated temperatures.

Not having definitely established a final curing cycle and not having determined whether drying by radiation from steam pipe will be necessary ultimately, a boiler plant of excess capacity was installed. The boiler is a 175-hp. high pressure Wickes, water-tube type, fired by stoker, and is one of the largest in the industry. It is operated at 100 p.s.i. boiler gauge and introduces steam into the curing rooms slightly in excess of 337 deg. F. Eight Webster-Nesbitt unit space heaters are also supplied steam for heating the plant by forced heated air.

#### Handling and Shipping

Intra-plant handling of concrete units into the curing rooms and to the cubing area is entirely by power lift trucks, there being three Hyster gasoline units in service and a Towmotor on order. Fork lifts transfer the cubes

to stockpile and load them on to trucks for delivery to the job. Size of rack has been increased to hold 36 pallets, or 108 8-in. concrete units, the exact number required for a 4-ft. cube. The racks hold 72 12's, or 216 4's. Cubing is done in back of the block machines, where the block machine sets the pace for the cubing workers, who must release the curing racks for re-use according to the turnover of racks from the block machines. Cubes of units are taken by fork lift trucks to stockpiles where they are stacked three high.

Domine operates its own fleet of delivery trucks, comprising eight Chevrolets, a Ford and three Dodge chassis which are being fitted with truck beds to accommodate two cubes side by side. Since 1935, moving equipment has been equipped with Truxmore (Truck Equipment Co.)

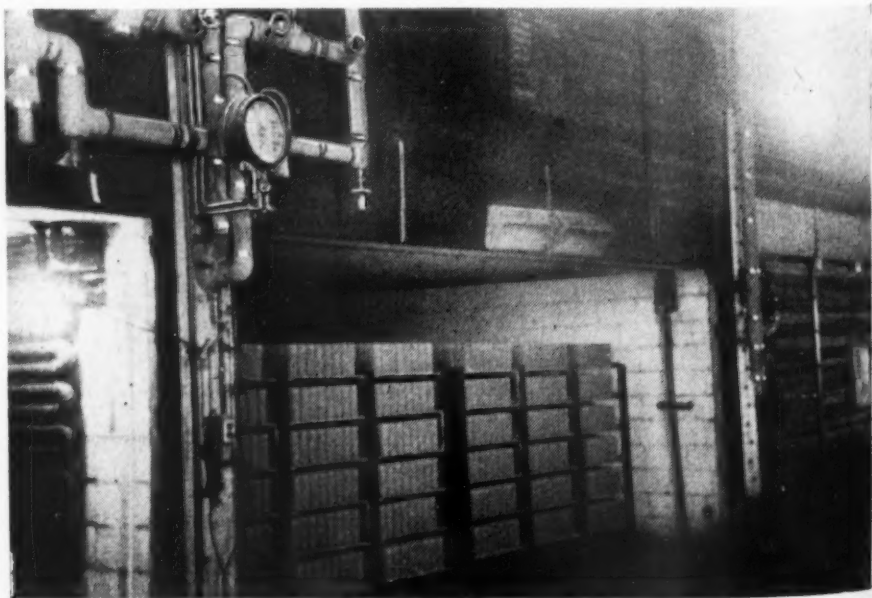
third axles to permit greater payloads and the newer equipment (6 trucks) has been similarly equipped. A man can load five or six cubes in ten minutes as compared to four or five men loading the same number of blocks in 45 min. before the cubing practice had been adopted, which has meant much more effective utilization of the truck equipment.

#### Summary

As pointed out, a substantial increase in the output of concrete masonry units per man-day has been effected in the new plant, amounting to one-third when compared to production in the plant operated previously. The number of men required to produce 12,000 units in 9½ hr. has been reduced to an irreducible minimum, with manufacturing methods available today. Eleven men are engaged in direct production and cubing, consisting of two off-bearers, four men for cubing, two pallet feeders, a mixer operator and two lift truck operators. Eight men produced 6000 units per day in the earlier plant. In addition, Bill Whitcomb, superintendent, is in charge of production and there is the equivalent of one and one-half men engaged in maintenance work. Two men are required to operate the cinder processing plant.

Laboratory equipment is being installed for conducting compression tests, for contained moisture determination and for the conduction of other tests related to quality control. A Watson-Stellman hydraulic compression machine will be utilized for daily compressive tests of units selected at random.

H. P. DOMINE, president and treasurer of Domine Builders Supply Co., Inc., was founder of the company. HARVEY H. BLACK is secretary and general manager. Offices are at 150 Gould street, Rochester, N. Y.



Close-up of one of the kilns, showing substantial construction and tight-fitting doors. Instrumentation control for kiln, to the left, which is equipped for heated air drying as well as steam curing

## Ready Mix Plant Designed to Overcome Operating Difficulties

Arrow Sand and Gravel Co. builds monolithic concrete plant to house free-flowing bins for aggregates and cement, batching equipment, boiler room and office under one roof

By BROR NORDBERG

**G**REAT INGENUITY and many years of experience in the design and operation of ready-mixed concrete plants have combined to make the new Sandusky plant of Arrow Sand and Gravel Co., Columbus, Ohio, one of the most unique and practical plants in the United States. The plant was designed by Stephen Stepanian, vice-president of the company, who is recognized as the originator of the concept of mixing concrete in transit, back in 1914, and who apparently considered all his "ideals" in the design and construction of this—his latest plant.

Construction features of the plant itself and the method of erection are most unique, and the facilities for handling aggregates, the batching, control features, general versatility and the adaptability of the plant incorporate practical ideas that can only result from experience. Uninterrupted material flow, effective and full use of gravity, the control of moisture in aggregates and other such production

factors that are often overlooked or not fully developed or understood were considerations in design of this plant. There are many innovations, among them provision for charging concrete into dump trucks, mixed concrete into agitator drums or batched materials for mixing in transit, which has been conventional practice in Columbus. The inventor of the drum-type truck mixer has recognized the advantages of air-entrainment in concrete and has anticipated the practicability of dump truck delivery in design of the plant.

The monolithic type double cylinder concrete structure shown here was developed by Mr. Stepanian when certain plant equipment was unattainable, and resulted in a plant that is nearly all under one roof even to the dispatching office and boiler room. An idea was developed into a plant of reinforced concrete construction, with a 15-ft. diameter cylinder inside a 30-ft. diameter cylinder, so that the

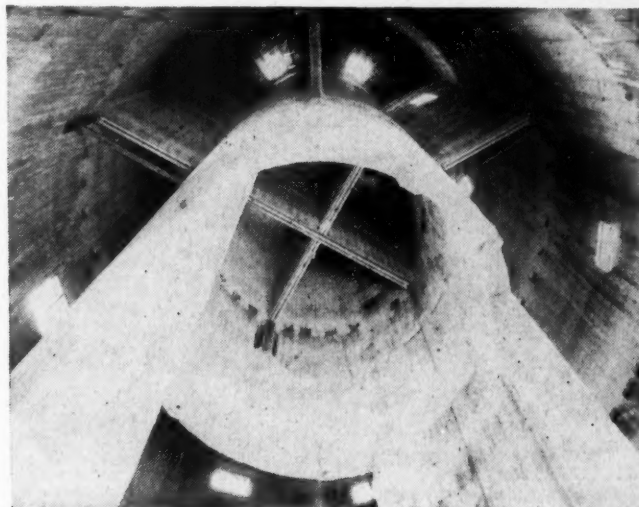
annular space between could be utilized in preference to separate buildings for office and boiler plant. It was decided that a high structure was needed, in order to provide sufficient overhead capacity for cement and aggregates in quantity and variety, while utilizing gravity to the fullest extent.

### Plant Structure

Accompanying illustrations show how the monolithic concrete structure was erected into a compact plant, utilizing reinforced concrete wherever possible. It will be noted that six aggregates compartments of equal capacity were provided in pouring the structure, with radial partitions between the inner and outer cylinders. The four quadrants in the inner cylinder were cast to provide for overhead storage of four types of bulk portland cement. Overall height of the entire structure, which is completely covered by a concrete slab roof, is 72 ft.

All the pour was of ready-mixed concrete from one of the company's other plants. A 2-ft. mat of reinforced concrete was poured as a base, and forming was assembled as shown providing a 13-in. inner wall and a 7½-in. outer wall with bin partitions, the pattern being carried upward the entire height of the plant. Four foot forming was used, jacked upward continuously day and night; and 12 ft. of wall was placed each day, requiring a week for completion. One of the illustrations shows the use of a water-filled drum and vertical glass tubing at designated points around the periphery as a positive means of maintaining accurate elevation. A turn of a petcock released water through a hose into the several vertical glass tubes, a simple method of gauging height of pour.

At designated locations, for windows and a 11-ft. through-driveway



Interior of monolithic, double-cylinder plant structure before the installation of equipment. Note the bin partitions, recesses for floor supports and the general excellence of the concrete



Overall view of monolithic concrete plant which houses offices, boiler room and all equipment except aggregates unloading hoppers and elevating equipment





Stephen Stepanian stands beside one of the modern mixer trucks. False concrete work was knocked out of structure to provide truck areaway and windows. Dump truck discharging sand on right

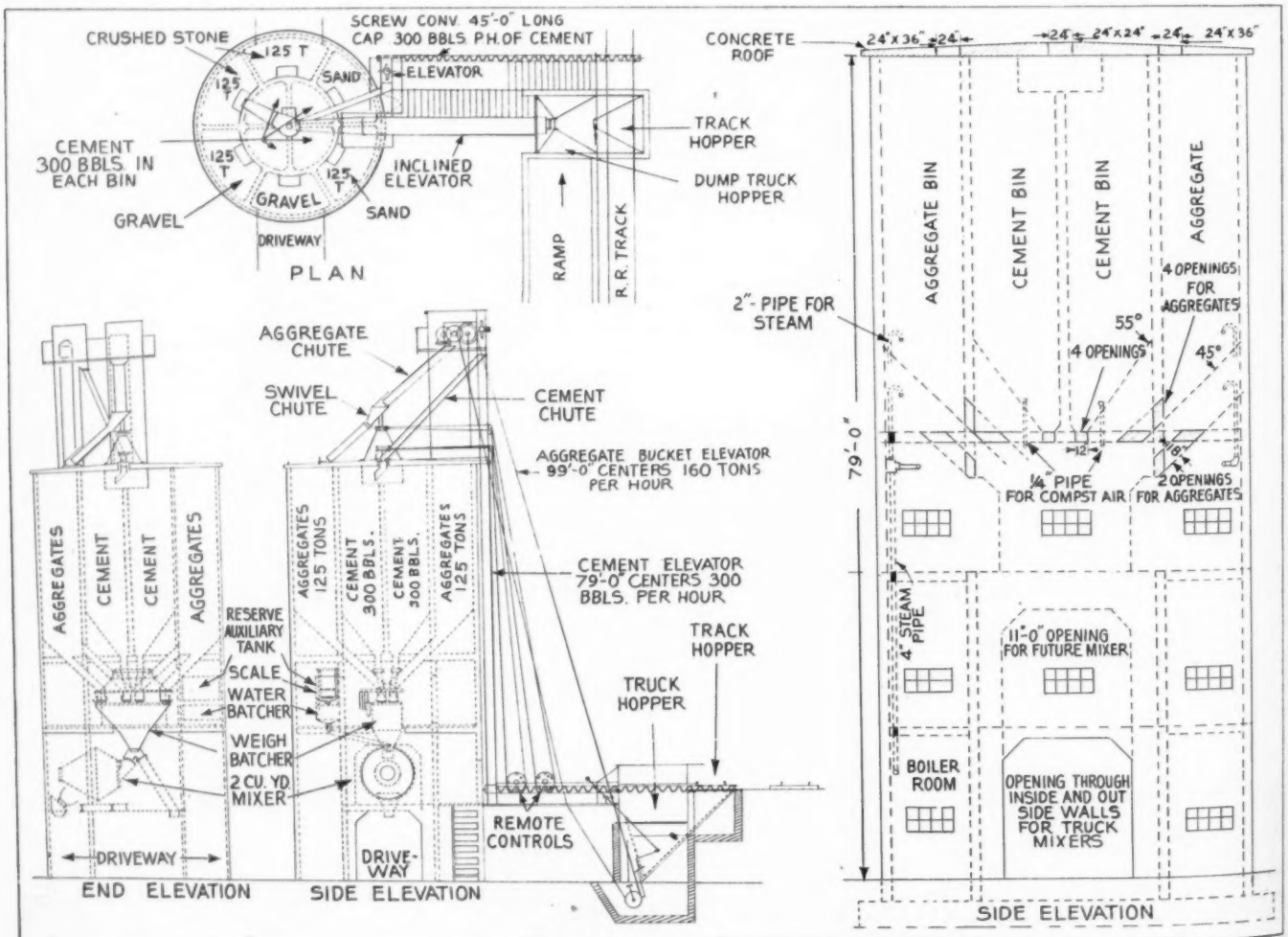
12 ft. high, false sections of walls of unreinforced, low-grade concrete were poured and knocked out later. Notches were provided for later erection of I-beams for flooring and to support the mixing equipment. Thus, a double cylinder plant was built, having a floor at the mixer level and another above where concrete is batched, adjoining the dispatcher's office. Above

are the ten bin compartments, entirely of reinforced concrete, converging to the batching station. Everything is housed under one roof with the exception of the aggregates hoppers and elevating equipment. Raymond C. Reese, consulting engineer of Toledo, Ohio, was engaged to design reinforcing steel for the bins.

Location of the plant is alongside

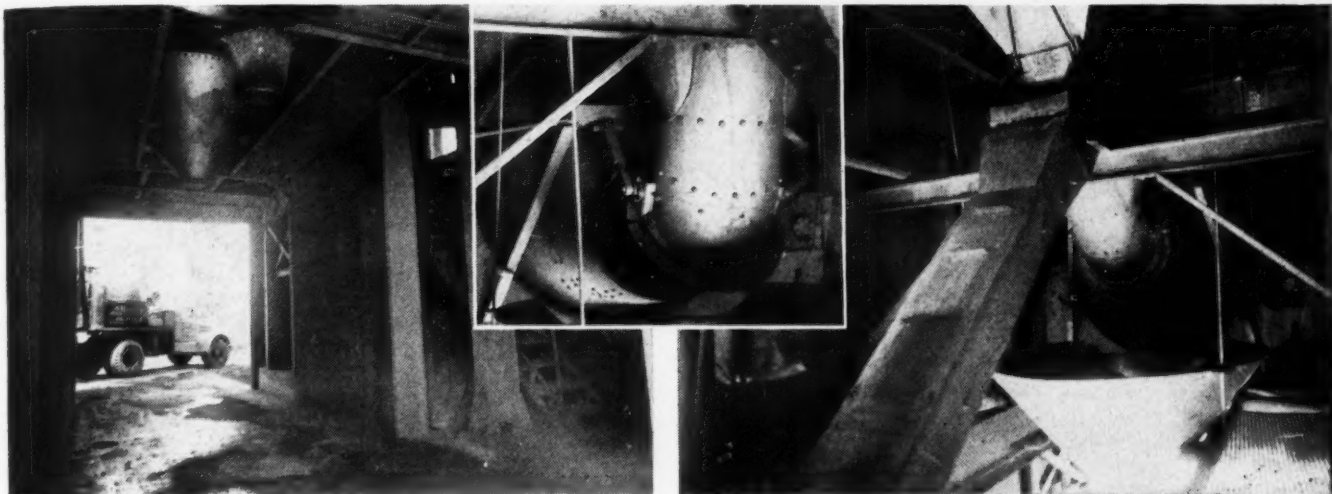
the New York Central tracks one mile west of the center of Columbus where it has ready access to the arterial center of truck haulage in East-West and North-South directions. It is 1½ miles from the company's sand and gravel plant, absorption of the haulage charge of 15¢ per ton being preferred to the location of the concrete plant at the source of aggregates which would necessitate a longer haul for the more expensive concrete delivery trucks.

Much attention was given to control of the water-cement ratio in batching concrete, through regulation of contained moisture in the aggregates, and the distance between the aggregates plant and the concrete plant is utilized for draining off excess water from the aggregates in transit. At the aggregates plant, sand is drained in ground storage, and loaded into 7-ton dump trucks by continuous portable bucket loaders which do not dig more than 3 ft. into a pile of drained sand. Any of three sizes of gravel are loaded out from plant bins. Practice is for the driver to raise the truck body a few inches for some 30 seconds after loading to permit runoff of water from the washed gravel. En route to the concrete plant most of the re-



Plan and elevation details of batching plant designed for both central mixing and transit mixed concrete

## BATCHING



Left: Telescoping chute, foreground, for charging transit mixers; inverted cone, background, charges central mix. Note stairway in annular opening between concentric concrete cylinders. Center, inset: Central mixer tilted pneumatically into discharge position. Right: Tilting mixer which is charged and discharged from the front end. Chute in foreground is for charging transit mixers

maintaining water in the voids becomes segregated and is easily run off. At the concrete plant, a grade of 25 per cent from the main road into the plant was purposely left for further drainage and the drivers, in approaching the elevator hopper, drive up a dead-end grade of steeper elevation, back down after a second stop for drainage with the body elevated slightly and proceed to the hopper.

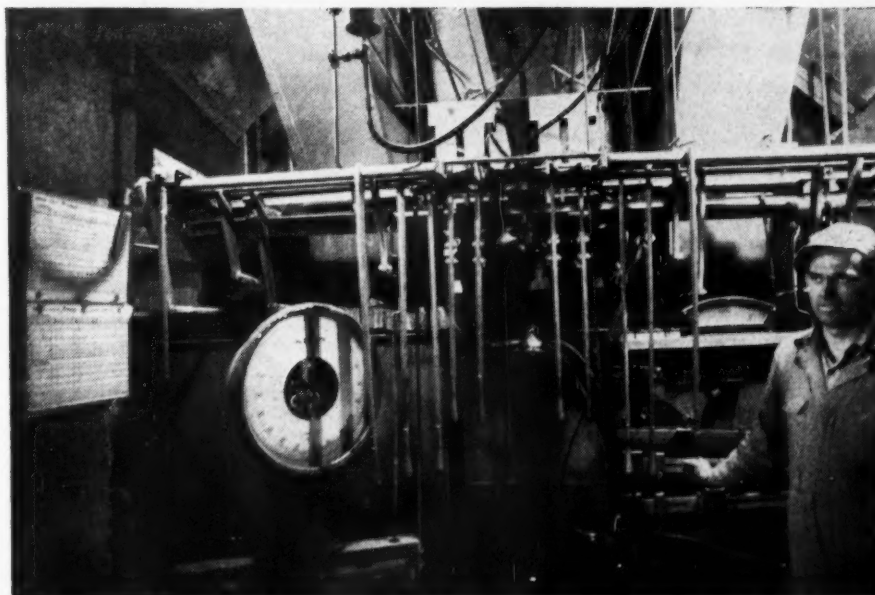
All this meticulous care to drain aggregates for the sake of uniformity of contained moisture is followed by protection from entry of rain into the plant bins. There is a concrete roof completely over the plant and the 24-in. square openings through which aggregates are spouted into the respective bin compartments are covered over by rain hoods.

With six aggregates compartments of 125 tons capacity each and four cement compartments of 300 bbl. capacity each, flexibility to meet various requirements has been achieved without the need for ground storage. Sand and gravel, manufactured stone sand, and crushed stone aggregates of various gradation are readily made available in concrete. Standard portland cement, high early strength cement or air-entraining cement can readily be handled, the latter being the commonly used cement at present.

Aggregates are received by trucks which dump into a 10- x 10-ft. hopper alongside the plant and adjacent to the railroad tracks where a 5- x 10-ft. hopper is to be installed for car delivery and transfer into the larger hopper.

Having inspected many concrete plants and having observed difficulties in connection with flow of materials somewhere in most of them, it is of particular interest that this plant was designed to overcome all those bottlenecks. Steel chutes and hoppers were arranged and given sufficient pitch that they are truly self-cleaning. There is no evidence throughout the

(Continued on page 132)



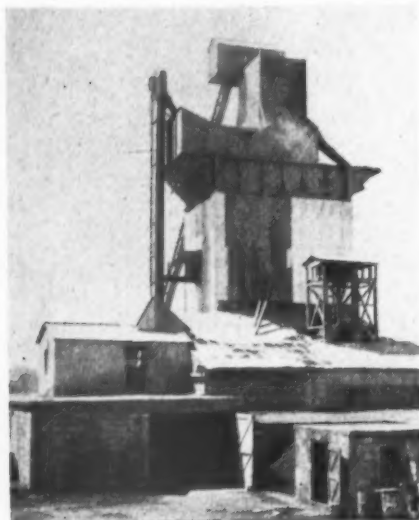
Operator Virgil Barnhaus demonstrates batching equipment. Note ten bin discharge levels, air lines above, and mix chute on left



Left to right: Virgil Barnhaus, plant operator; Robert Massman, sales engineer; Stephen Stepanian; and George Bukey, sales engineer



# Lightweight Aggregates



Concrete block plant with large capacity bins for aggregate and cement



Transport scoria to primary jaw crusher with a scoop-lift



Yard hoist makes stockpiling block an easy job

## SCORIA For Concrete Block

Edgar D. Otto & Son, Albuquerque, N. Mex., use inexpensive natural aggregate. Make lintels and coping on block machines; also manufacture cored floor slabs

By WALTER B. LENHART

**A**LBUQUERQUE, New Mexico, situated on the headwaters of the Rio Grande river is the largest city in New Mexico and is the commercial and industrial center for a large area. This old city, once a Mexican village which has grown to its present population of almost 80,000, is the business hub for not only the State of New Mexico but parts of Arizona, Texas and Colorado.

Albuquerque also is favorably situated for the production of concrete masonry block, especially block of lightweight aggregates, for surrounding the city are immense areas that at one time, ages ago, were the center of intense volcanic activity. These earth disturbances created in abundance two lightweight aggregates; pumice and scoria.

### Deposit—A Mountain of Scoria

Scoria, a dark colored, volcanic clinker, is probably harder and tougher than pumice and a little heavier, and it is made up of a multitude of cells ranging from the size of a grain of rice to microscopic sizes. It has excellent insulating properties with the added advantage that masonry units made from scoria can more easily be made to comply with compression and tensile strength requirements than is the case with some other natural lightweight aggregates.

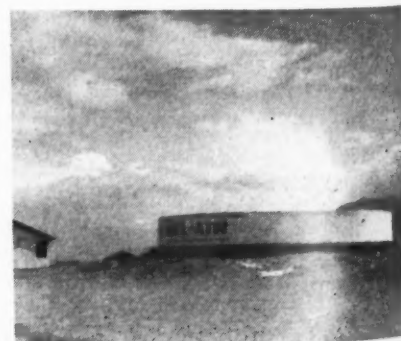
EDGAR D. OTTO, formerly of Downers Grove, Ill., came to Albuquerque many years ago and learned about this natural lightweight aggregate. Having something of the prospector in him, he set out to explore (mostly on foot) the many dark-colored cinder cones south of the city, and finally selected one particular volcanic cone as having a material most suited to the needs of concrete masonry manufacture. This deposit, about 28 miles south of Albuquerque, is a small sized mountain of scoria that dominates the surrounding area. No stripping is necessary; no drilling or blasting—a Caterpillar "60" and dozer breaks down the material and pushes it to a truck loading tunnel. Trucks, working on a contract basis, haul the crude

scoria, carrying loads of 8 cu. yd. which is equivalent to about five tons per load.

After locating the deposit and making a deal with the chiefs of the Pueblo Indians—the latter no small accomplishment in itself—to mine the scoria on a royalty basis (4¢ per cu. yd.), Mr. Otto returned to Albuquerque and seven years ago started up his block plant. It can be said that Mr. Otto is one of the pioneers in the development of the use of scoria for concrete masonry and his pioneering has paid off, for today due to the inherent excellence of his products and modern plant technique, Edgar D. Otto & Son is the largest masonry producer in the State. Products also are shipped as far as 350 miles into parts of Arizona and Texas.

The scoria delivered to the plant is dumped onto a concrete floor where the material is built to a small stockpile. From this stockpile, the scoria is reclaimed by a Davis-Westholdt scoop lift which is mounted on a Fordson tractor, and for this light work has proven very satisfactory. Mr. Otto has two of these units.

Visitors at the plant often wonder why the scoria is not dumped into a truck hopper of some sort and reclaimed by conveyor belts, as is often the practice where pumice or hard aggregates are used. The reason is, that crude scoria in sizes from 6-in.



Increase capacity of water reservoir, using concrete block reinforced with steel rods and plastered inside and out with cement grout

to fines is so angular and harsh that the material will not readily flow out of a gate or other small opening.

The reclaiming shovel dumps to a 16- x 24-in. Gruendler jaw crusher. Crushed scoria falls to a short inclined belt serving a set of 16- x 30-in. Pioneer rolls set to deliver a 3/8-in. product. The rolls discharge to an open bucket elevator which elevates to the top of the plant where the material flows to a 3- x 7-ft. Universal single-decked vibrating screen. The scoria aggregate falls to bins below and the oversize returns to the rolls via a metal chute. As the scoria is very abrasive, the face of the rolls is built up every Sunday with Stoodite hard surfacing metal.

## Operates Six Block Machines

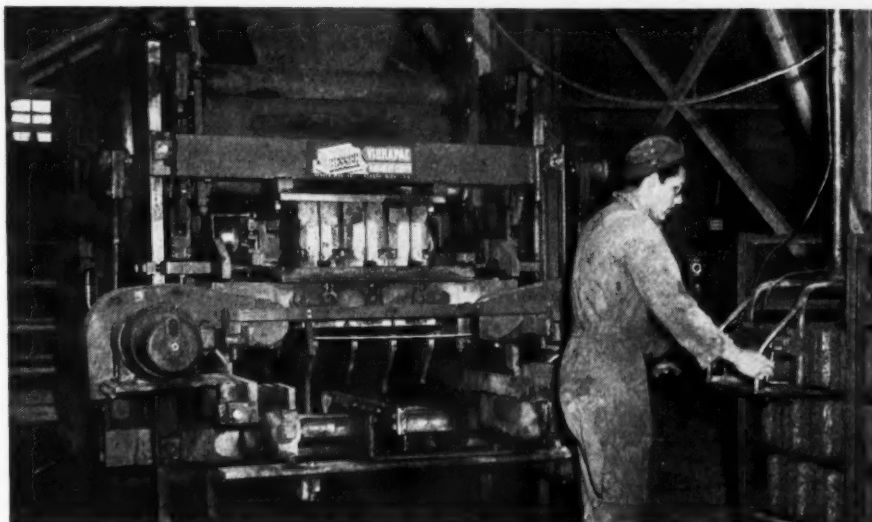
Scoria aggregate and bulk cement is weighed separately to two 50-cu. ft. Besser mixers by a Blaw-Knox batcher with each mixer serving a Besser Vibrapac machine. One of the machines makes the 6- x 8- x 16-in. block, and the new Besser makes 8- x 8- x 16-in. block exclusively. Until recently one of the mixers, located on the floor level, used a skip to deliver to the Besser block machine. The plant also has four Kirkham vibrator block machines, and Mr. Otto has just ordered two FMC Kirkhams, fully automatic machines. He believes it to be an advantage to have this type of machine available to take care of the widely diversified line of concrete masonry units he makes other than the standard 16's that are so popular in the area.

Bulk cement is delivered to the plant by rail. Cars dump to a track hopper serving a series of screw conveyors and bucket elevator to the cement storage bin. The elevator and cement handling equipment is all Stephens-Adamson.

## Curing Room Construction

Scoria cement block, marketed under the trade name, "Lavalite," are moved to one of the nine steam kilns using two Automatic Transporter lift trucks which are battery-powered units and easily handle the rack-loads of green block.

The kilns are constructed of 8- x 8- x 16-in. block, even the roofs. For the latter, Mr. Otto has originated a method of making roof slabs of the scoria 4- x 8- x 16-in. block. He places seven block, one on top of the other, each bedded in portland cement grout. Two reinforcing rods are put in the two outer cores and these openings are then filled with standard scoria concrete. After the concrete has set and cured, the assembled slab is mounted in the roof member between suitable I-beams. This unit fills a 5-ft. c. to c. span. It makes a very satisfactory roof due to the high insulating value of the scoria aggregates. Steam is supplied by a coal-fired boiler.



Off-bearing concrete block from high production machine

## Make Up Lintels From Block

Lintels are also made at this plant by joining standard "channel" block endways with neat cement grout, placing a reinforcing rod in the channel, and then filling the blocks with scoria concrete. Such a lintels will match in color that of the scoria block, has all the thermal advantages of the scoria block and is easy and cheap to manufacture and install. It insures the entire building walls to be free from any chances of excessive heat or cold conduction as would not be the case should standard concrete be used for the lintels. By this method, lintels up to 9 ft. 4 in. long are made. The channel block used are standard units although it is said that Mr. Otto was the original designer of this block and the first to make it on a Kirkham ma-

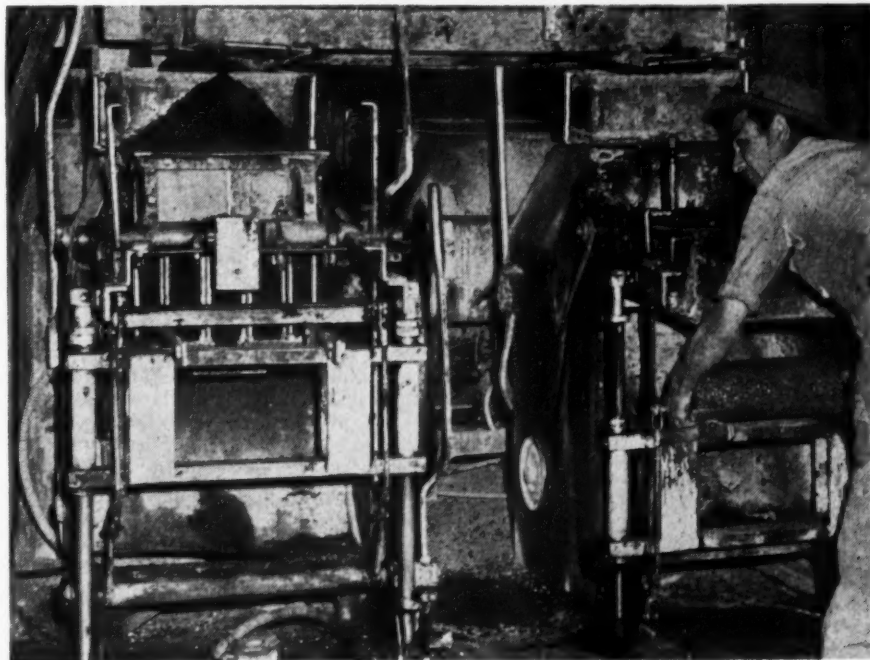
chine. Another unusual block made here is a coping block for the top of garden walls, etc. It resembles one-half of a cylinder, 6- x 16-in. (approximately), and is of non-cored scoria concrete.

After steam curing, the masonry units are stockpiled in the yard by a Stearns yard hoist. This device, with one operator, will do the work of about five men. Deliveries are made by a fleet of four company owned trucks assisted by two rental trucks.

## Floor Slabs

A cored floor slab, using the Poston process, is manufactured in units 12 in. wide and up to 20 ft. long with two 4-in. diameter cores. The cores are made by a paraffined paper tube which remains in the concrete. The

(Continued on page 138)



Two of four vibrator block machines on which specialties are made. Operator is shown removing a coping block



## BATCHING

(Continued from page 129)

plant of any need for ramming, pushing or hammering of chutes or hoppers.

The steel truck hopper, for example, has a pitch of 55 deg. from the horizontal on three sides and a 70 deg. pitch on the fourth side near the point of drawoff into a 102-ft. centers bucket elevator. Semi-circular segments were welded into the four corners of the hopper to discourage build-up of sand, with the result that the flow through the throat of the hopper is uniform and a feeder is unnecessary. The plant bins are similarly designed with 45 deg. slopes for aggregates and 55 deg. in the cement compartments, with drawoff from all concentrated at the plant operator's station.

A foolproof system of regulation of filling the bins was designed into the plant so that it is unnecessary for workers to climb to the top of the plant. In filling bins, the operator at the truck hopper has a wheel-type remote controller for selection of a given compartment overhead. A turn of the wheel actuates a single swivel spout from the elevator to make contact with either of six fixed spouts into the aggregates compartments. An electrical connection closed by the turning spout at each of the six stops rings a bell which indicates to the operator that he has accurately spotted the spout. The flow of cement from railroad cars by way of a 45-ft. cement screw conveyor and 300 bbl. per hr. enclosed bucket elevator, into the various compartments, is also controlled.

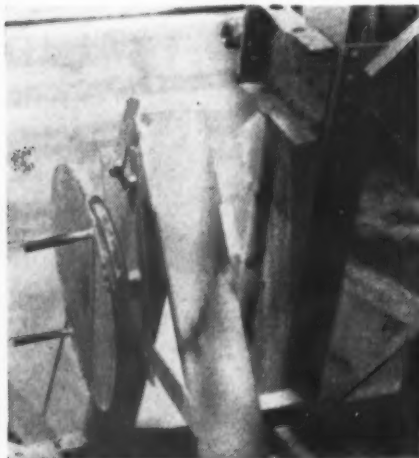
Electrical bin level indicators warn the operator when either of the ten bins is approaching full or empty level. The system, a C. S. Johnson development, consists basically of contacts on the several bin walls that form closed electrical circuits when actuated by diaphragms.

A panel with bells, lights and switches for each bin is mounted inside the plant at a location close to the aggregates operator's station. When a bin becomes full, a red light flashes and a bell rings. The operator flips a switch on the board and the process will later repeat to indicate an empty bin. When a full bin is indicated, reserve space for 10 or 20 tons of aggregates and some 15 bbl. of cement is available and, when an empty bin is indicated, similar quantities are yet available in the bins.

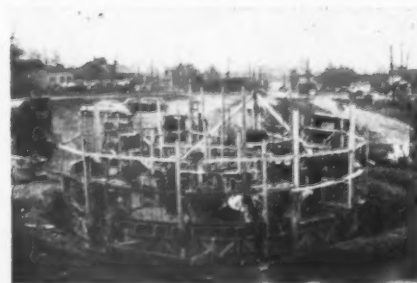
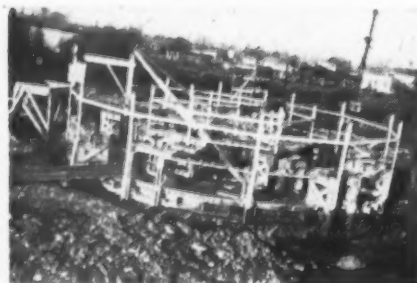
### Batching

Batching capacity is 800 cu. yd. of concrete per day, of transit mixed concrete or central mixed concrete either for mixer drum or dump truck delivery. Three men are required to operate the entire plant. A single operator at the batching floor handles the entire batching plant without leaving his station while the others

(Continued on page 136)



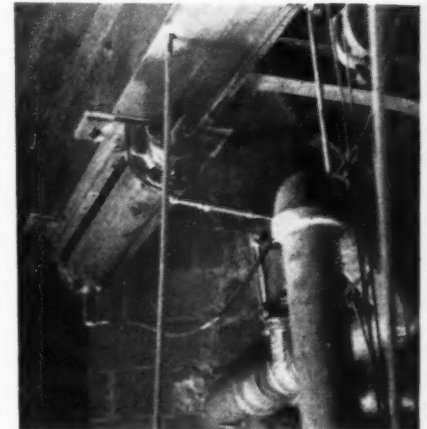
Remote control spout for swivel spout at head of aggregates elevator



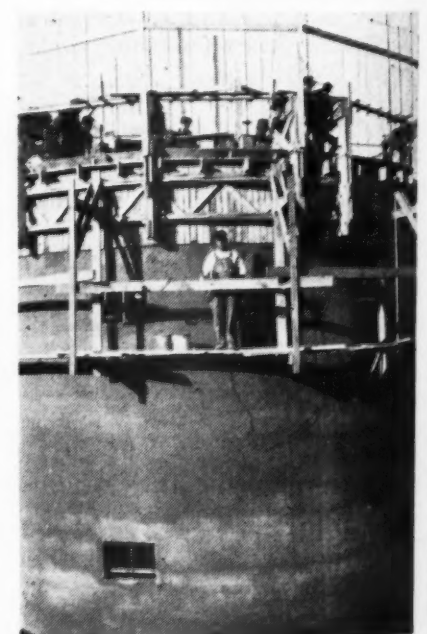
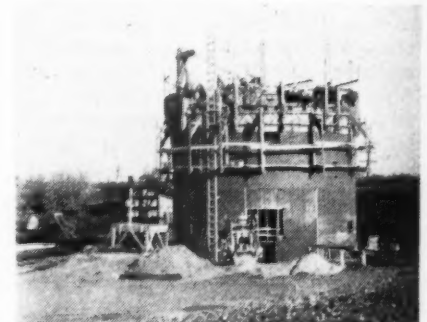
Showing steps in the construction of monolithic concrete plant: (1) Following pouring of 2-ft. foundation mat, outside forming is taking shape; (2) placing 4-ft. slip form; (3) water gauges at each upright and drum for maintaining correct elevation; (4) progress view



Showing how trucks are drained of water before discharging into plant hopper



Air cylinder for raising or lowering telescopic chute in charging transit mixers



Partially completed structure

# Gravity Flow of Materials Cuts Handling Costs

**Schory Cement Block Co., Canton, Ohio, uses slag for aggregates**

EVER since the first concrete blocks were produced by hand labor the ultimate goal of the operators and equipment engineers has been to produce blocks by finger-tip, push button control. An example of what has been achieved in this line to move the block industry from backyard to assembly-line production is the new Schory Cement Block Co. plant at Canton, Ohio.

From rail-delivered cement and aggregate to finished block all the manufacturing processes are smoothly integrated by finger-tip machine-controlled production. The block machine operator has complete control from the mixer to the finished block coming off the machine with an all-hydraulic system operating levers within arms-length reach.

An added simplification factor is the use of Slaglite aggregate which is a pre-blended slag aggregate which eliminates proportioning other than the final cement mix. The Slaglite block produced weighs only 33 lbs. per standard 8 x 8 x 16 in. block and also is advertised for its nailability and acoustical properties. This slag aggregate is a product of the Youngstown plant of the Standard Slag Co., which also furnished engineering counsel on the product usage.

The slag aggregate and bulk cement are both delivered in railroad cars on the adjacent W. & L. E. siding, unloaded into pit hoppers between the rails and conveyed to the overhead storage bins: the cement by screw conveyor to the 50 t.p.h. bucket elevator and the slag by belt conveyor and bucket elevator.

Although the 4-compartment overhead bin has three separate aggregate compartments this separation is not required for the pre-blended Slaglite. Each of the three aggregate bins will hold 45 tons of Slaglite and the cement compartment holds 300 bbl.

Batching is controlled by the Blaw-Knox 50 cu. ft. capacity combination cement and aggregate weighing batcher equipped with a reading beam for each of the four overhead compartments. The 50 cu. ft. Besser concrete block mixer directly below the batcher then mixes the weighed raw material batch for the block machine on the floor level below. An integral part of this Besser Super Vibrapac block machine is the power hoist for removing the block to racks making it a one man performance.

Batching and mixing are controlled by the mixer operator from his posi-

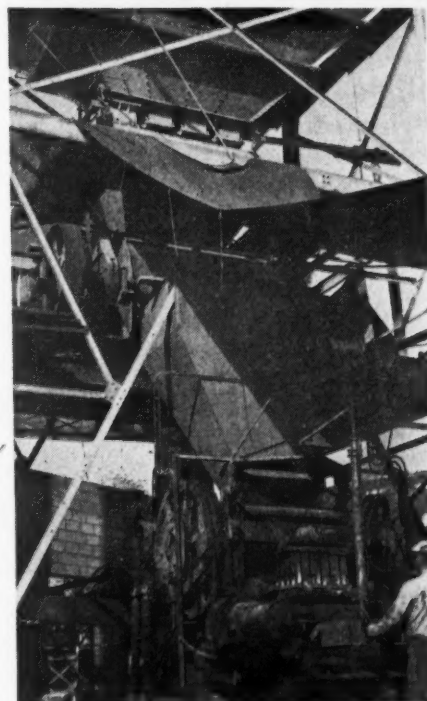
tion on the mixer platform since the operating levers have been extended to the side of mixer within easy reach.

For transferring the finished block from machine to steam-curing vaults and for yard storage, two Clark 3-ton capacity power lift trucks are used.

Four steam curing rooms are now being operated for a daily curing capacity of 7500 block.

Machine capacity is rated at 600 units per hour of standard 8 x 8 x 16 in. blocks. All the storage yard space is smoothly paved concrete and steam rooms are of concrete block construction as is the incompleted block machine housing building.

Owners of the Schory Cement Block Co. are Joseph Goetz and Ralph and Robert Schory, brothers.

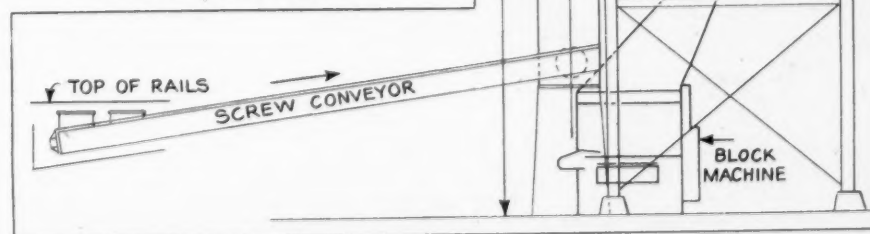


Block machine operator removing three standard size block with power off-bearer. Mixer and weigh-batching equipment on platform above



Slag elevator and bins, on the right, and bulk cement elevator and storage bin, on the left. Building to house block machine was incomplete when picture was taken, but plant is in operation

Elevation plan of batching, mixing, and block manufacturing facilities. Screw conveyor transports bulk cement to bucket elevator and thence into bins. Aggregates are conveyed by belt conveyor from track hopper to elevator back of cement elevator

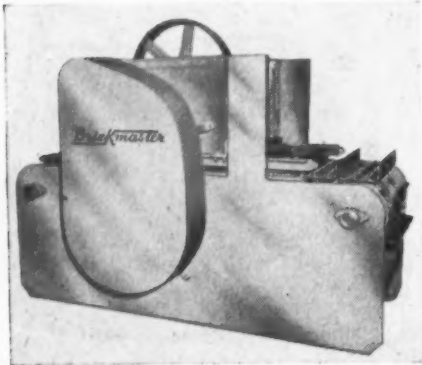




## NEW MACHINERY

### High Production Brick Machine

BRICKMASTER, INC., New York, N. Y., has introduced a concrete brick manufacturing machine, known as the Brickmaster, which it is said will pro-



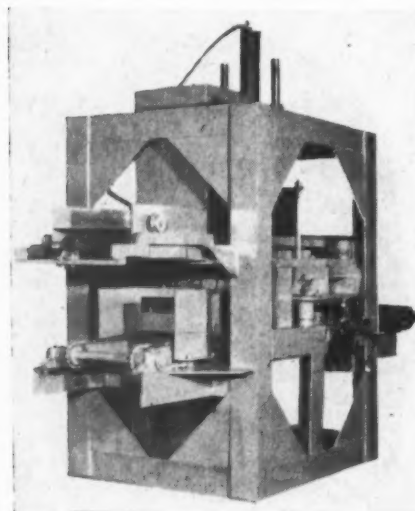
Brick machine which operates on a continuous production line principle

duce up to 6000 standard brick per hour. The bricks are formed six at one time every  $3\frac{1}{2}$  seconds on a continuous conveyor arrangement, and at a cost of less than \$10 per thousand, according to the manufacturer. It will make all standard size bricks in singles or multiples or plain slabs.

The machine is of welded steel construction with heavy duty bronze bearings. It weighs only 3600 lbs., yet is said to be so compact that it can be installed in two hours, it can be readily moved about, and is adapted to the production line of any concrete products plant.

### Hydraulically Operated Block Machine

LEEMON ENGINEERING & MACHINE Co., Ludington, Mich., has developed a concrete block machine known as the Electropac having some interesting features. This machine was displayed for the first time at the ex-



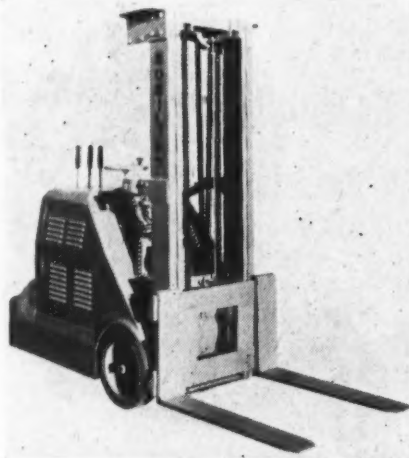
Compactly built block machine

hibit of the National Concrete Masonry Association this Spring.

The sequence of operations after the concrete mix is dumped into the machine hopper is as follows: The feed box moves forward over the mold box, and the vibration and agitator motion is started automatically. After the mold box is filled, the feed box moves back, striking off excess concrete. The stripper head then moves down and fully presses block to size. The block is then stripped out of the mold box down to the conveyor chain. Pallet and block are moved by the conveyor chain from under the mold box, and a fresh pallet is conveyed under the mold box. The pallet receiver picks the pallet up and holds it in position under the mold box ready for the next cycle of operations in making the block. This company also manufactures a paddle type mixer.

### Lift Truck Operated By Air-Cooled Engine

GENERAL EQUIPMENT Co., Portland, Ore., has developed its Model F, Mobilift having a rated capacity of 3000 lbs. on a 15-in. load center. It con-



Easily maneuverable lift truck

forms with the 2000-lb. Mobilift, but is said to have greater balancing capacity to handle heavier loads.

The Model F weighs approximately 4450 lbs., and is equipped with a specially-designed, 20-hp., three-cylinder, air-cooled engine. No gear shifting is required, and it has an overall turning radius of 61 in., making it very maneuverable. It is equipped with a roller chain lift, available in lifting heights of 68 or 108 in.

### Material Loader

THE FRANK G. HOUGH Co., Libertyville, Ill., has announced its Model HF Payloader, with a  $\frac{1}{4}$ -cu. yd. shovel. This unit has a 4-speed, fully-reversible transmission that is said to provide practical forward digging speeds plus high reverse maneuvering speeds with a minimum of shifting. A single lever shifts gears into the desired speed range, and thereafter the operator controls forward or reverse by merely flipping a directional lever.



Loader with bucket control arranged to dump completely or gradually at any height

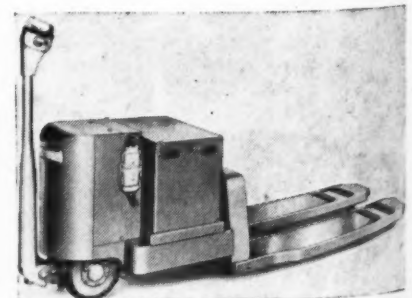
The bucket is raised, lowered, dumped and relatched by hydraulic power, controlled by a single lever. The loader has large, easy rolling wheels, equipped with hydraulic brakes, and a simple automotive type steering. A bulldozer blade, crane hook, cab and snow bucket also are available for use with this machine.

### Hydro-Electric Lift Truck

LIFT TRUCKS, INC., Cincinnati, Ohio, has brought out its Model K, Hydro-electric motorized lift truck in both platform and pallet styles in a variety of sizes. All styles have a 4000-lb. capacity with two forward speeds and two reverse, plus dynamic braking.

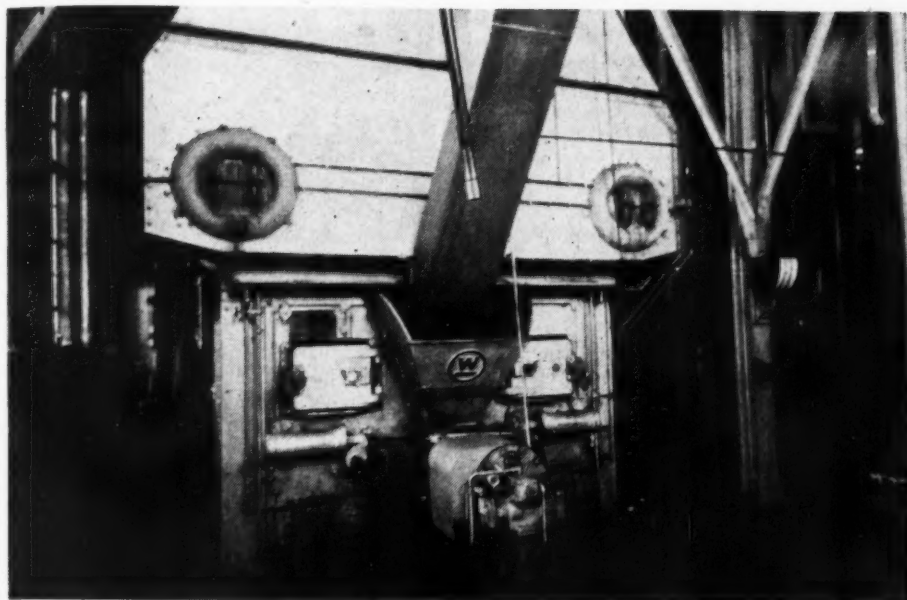
Designed for complete electrical operation, a compact motor and pump comprise the power lift. All speeds and the brake are instantly controlled by three push buttons contained in the steering handle. Forward and reverse buttons are two-position, giving low speed when partially depressed and full speed when depressed to the second position. The Stuebin two-wheel front drive is said to offer greater stability and easier turning.

Pallet models are 24- and 27-in. wide, 30- to 60-in. long with a 4-in. lift from  $3\frac{1}{2}$  in. lowered position. Trucks can be equipped for 8-, 12-, and 24-hr. service with standard batteries.

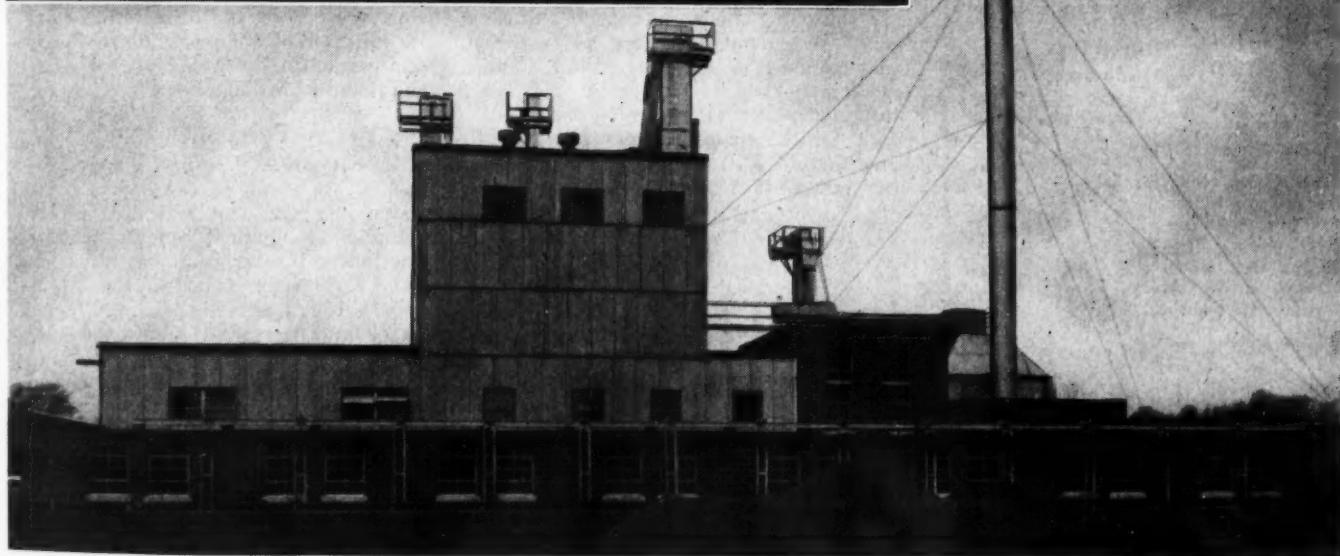


Platform model of hydro-electric operated lift truck

# WICKES STEAM BOILER Selected For High Temperature Accelerated Steam Curing In Leading Concrete Products Plant



High efficiency Wickes Type A Boiler (left) installed in Domine Builders Supply Co. plant (below) to supply steam in curing up to 21,000 concrete blocks per day.



The heart of the steam curing system in Domine Builders Supply Company's outstanding new concrete products plant is a 175 h.p. Wickes Type "A" boiler which maintains high curing temperatures for the modern accelerated curing cycle (21,000 units cured per day) with ample over-capacity for contemplated future expansion.

Because Wickes Boilers are designed and engineered to give maximum heat transfer per pound

of fuel burned, Wickes is the choice of leading nonmetallic-minerals producers wherever steam boiler efficiency is required.

Wickes waste heat boilers are also widely used in the Portland Cement industry and in other industrial plants over the world. Write today for complete particulars.

**SALES OFFICES IN ALL PRINCIPAL CITIES**

## THE WICKES BOILER CO. SAGINAW, MICHIGAN

RECOGNIZED QUALITY SINCE 1854

CONCRETE PRODUCTS, July, 1947  
A Section of ROCK PRODUCTS





## FASTER CUTTING

...with

### Clipper Masonry Saws

Your Special Size and Shape Brick or Concrete Block can now be "Tailor-Made" at a moment's notice!



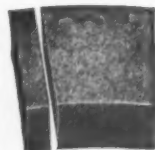
The new Clipper Multiple Cutting Principle makes possible faster cutting of every masonry material regardless of hardness.

Here are a few typical examples of the speed and accuracy with which concrete products and fire brick can be cut.



This concrete block, converted into a special size, was cut completely in two in 19 seconds.

One of the many intricate cuts performed on first quality clay brick for heat treating furnaces—made in 8 sec.



Rotary Kiln Blocks, cut to size for "key" bricks in rotary kilns, require only 10 sec. for completion of cut.

Basic refractories for steel furnaces or cement kilns must be accurately installed. This magnesite brick was cut in 12 seconds!



You Can Have a CLIPPER ON TRIAL Write for CATALOG



CLIPPER MFG. COMPANY

Warwick at 28th, Kansas City 8, Mo.

## Batching

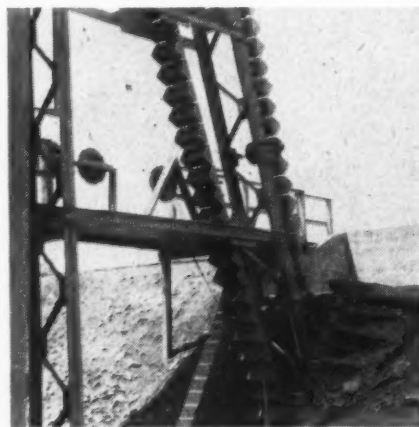
(Continued from page 132)

operate the aggregates handling equipment, boiler room, etc.

All the bins converge, through their sloping sides, to the batching floor where the installation consists of a C. S. Johnson aggregates and concentric cement weigh batcher and a weigh batcher for the mixing water. Live steam connections are available for release of live steam into the aggregates bins during freezing weather and heating water may be heated by live steam. A Westinghouse air compressor has been installed at the batch floor level to supply the air for aerating cement in batching.

The operator has ten levers at his command for release of aggregates and cement into the batcher, weighing being accomplished on Kron scales. The cutoff on cement flow is automatic. Source of water supply is a 100-ft. driven well and a deep well pump automatically-operated to start and stop in filling an auxiliary water tank over the water batcher which has an automatic cutoff. A 2-in. city water connection has been provided to guarantee a supply of water.

A divided chute permits discharge of a batch of concrete materials either into a central mixer or into truck mixers. A telescoping chute arrangement, pneumatically-operated from the batching floor, has been improvised to permit charging all makes and heights of transit mixers. The stationary mixer (a second will be installed) is a tilting type 2-cu. yd. S-56 Smith mixer that saw service in one of the T.V.A. concrete proportioning plants. The mixer is unusual for

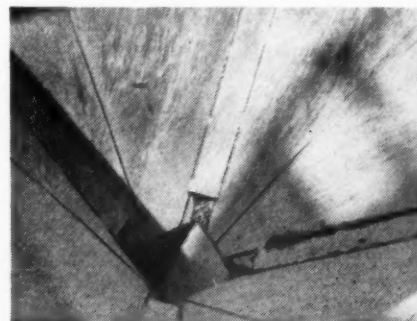


Close-up of aggregates elevator and hopper, showing remote control wheels for diverting materials into proper bins, above

the commercial ready-mixed concrete industry. Its design provides for receiving aggregates and discharging the concrete from the same end; i.e., toward the center of the circular structure. Driven by a 30-hp. electric motor through V-belt, the mixer is discharged into an inverted conical cable-suspended hopper from which dump trucks or drum-type agitators are filled. The tilting for discharge is done pneumatically from the batching floor to any desired velocity of dis-

charge, the discharge gate holding stationary. Having a vent at the back end of the mixer is effective in reducing cement dust.

Loud-speakers at the batching floor and below where trucks are loaded, and an order drop spout from the



Interior of steep angled, self-cleaning aggregate hopper. Note semi-circular segments in corners

batching floor are auxiliaries that help expedite operations. The boiler room is in the annular space between the concrete walls at ground level. A 30-hp. Kewanee horizontal boiler, stoker-fired, provides the steam for heating aggregates and mixing water in cold weather, the smoke-stack of the boiler passing through one of the aggregates bins to utilize that source of heat.

Delivery equipment consists of 3-cu. yd. and 4-cu. yd. high-lift Smith mixers, all on White chasses. Three Maxon Dumperetes of 3 cu. yd. capacity mounted on Ford chasses are on order.

## Personnel

Mr. Stepanian has had a long history in the ready-mixed concrete industry as a practical, technical expert and also has gained renown for his very active interest and participation in the National and State Associations of both the ready-mixed concrete industry and the sand and gravel industry.

He was president of the National Ready Mixed Concrete Association in 1943 and 1944 and is a member of its Board of Directors and also serves on the Board of Directors of the National Sand and Gravel Association. He was the first president of the Ohio Ready Mixed Concrete Association, was one of the early presidents and is now treasurer of the Ohio Sand and Gravel Association.

The Arrow Sand and Gravel Co., an affiliate of the Marble Cliff Quarries Co., started the production of ready-mixed concrete in 1926. Other plants in operation are the East End plant and the Grandview plant, both in Columbus. Virgil Barnhaus is operator of the new Sandusky plant.

In the past 25 years, Mr. Stepanian has designed several ready mixed concrete and sand and gravel plants for the company, all of which had advanced features at the time of installation. These plants include the Grandview plant in 1921, the Franklin plant in 1926, and the Port Columbus plant in 1942.

## Joining Concrete Pipe

(Continued from page 121)

the grout was partially deflected into the joint. Here as at all points around the pipe an excess of grout was built up over the joint. Inspection showed the joints to be tight, non-porous and practically impervious to the infiltration of water. A dry mix of 1 part portland cement to 1½ parts fine sand is used.

The cost per joint including the royalty charges to the inventor normally is slightly less than for the hand mortar joint but contractors are getting a considerably higher amount when the device is used in the Tacoma area. It's probably just the result of the age old aversion of many to use new ideas.

As a result of this development, Tacoma pipe manufacturers are being asked to make slight alterations in the design of their pipe. On hand mortar connections it has been customary to lute from the inside of the pipe so a small recess ¼- x ¼-in., was ordinarily placed on the inside to receive the grouting. With this device the recess is left on the outside of the pipe: the inside joint is flush and tight before grouting and the ring-like opening on the outside is filled by the air gun.

This air gun also has been used for laying large diameter concrete pipe to make the curves, etc. Here the manufacturer supplies wedge-shaped pipe sections that are made by simply slicing off a section of the green pipe. These wedge-shaped sections are then grouted into place with this air gun. The air gun is so small and convenient to handle that no doubt many other uses will be found for the apparatus. This tool now gives the concrete pipe industry a method of making joints that should further extend the use of concrete pipe for sewer and water purposes.

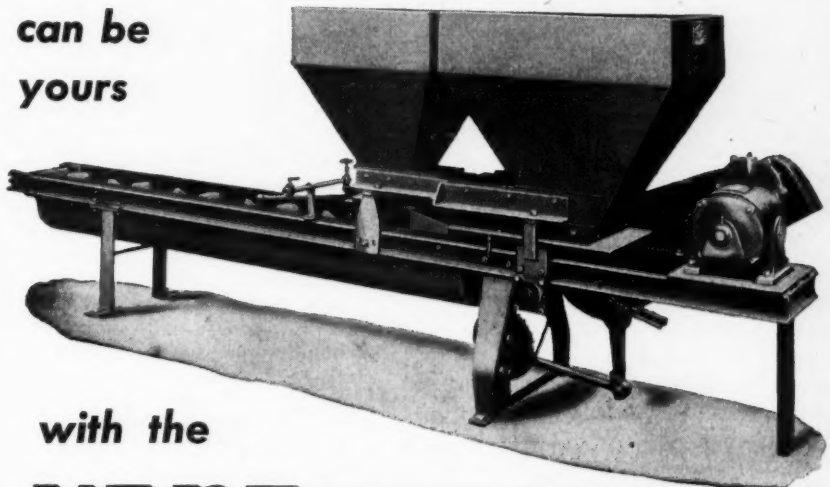
## All-Steel Concrete Plant

THE BECKLEY AND MYERS CO., Springfield, Ohio, is constructing an all-steel ready-mixed concrete plant at an estimated cost of \$30,000. The new structure will be 85 feet high and will have a capacity of nearly 400 cu. yd. of concrete per day. This plant will have a reserve silo for several carloads of bulk cement, and all materials will be handled mechanically.

## Masonry Business Started

LEO AND HUBERT WHITE, doing business under the firm name of White Bros., are planning to start a concrete and masonry plant in Wisconsin Rapids, Wis. The new firm will specialize in home construction work, laying of sidewalks, masonry, and other related work. Both men have been engaged in construction and maintenance work in the Wisconsin Rapids area for many years.

**Continuous  
PROPORTIONING and CHARGING  
Continuous  
MIXING and DISCHARGING  
Continuous  
PRODUCTION and PROFITS**  
  
**can be  
yours**



**with the**

**KENT Continuous MIXER**

**AVAILABLE ON TWO WEEKS DELIVERY**

Phenomenal production at lower costs has been obtained by American industry through "straight line" manufacturing.

Similar results have been attained for many years in concrete products manufacturing largely through the efficient aid of the Kent Continuous Mixer.

With other machines capable of practically continuous cycle operation the installation of a "Kent Continuous Mixer in the line removes the bottleneck that often exists.

More accurate control of mix proportioning, blocks of more consistent uniformity, and an increase of output at lower cost are obtained as less labor is needed for operation.

A reciprocating plate feeds cement and sand into the trough. There it is dry mixed approximately one-third of trough length when the "positive water control" system begins adding an even amount of water in proportion to mix desired. Thoroughly mixed concrete moves forward continually and is discharged into a reserve hopper or the block machine.

The proportion of cement to sand is easily and widely variable as is the frequency and length of stroke of the feed plate to change the volume of output, as desired.

Every progressive cement products manufacturer should write for the literature offered below and become familiar with the advantages of this widely popular and thoroughly proven machine. Send the coupon.

*\*For those whose conditions or preference require it, Kent also manufactures an advanced type of batch mixer.*

**The KENT MACHINE COMPANY**

*Manufacturers of CONCRETE PRODUCTS MACHINERY Since 1925*

CUYAHOGA FALLS, OHIO, U.S.A.

**Send complete information and prices as checked below.**

☐ Kent Continuous Mixers

☐ Kent Batch Mixers

Name .....

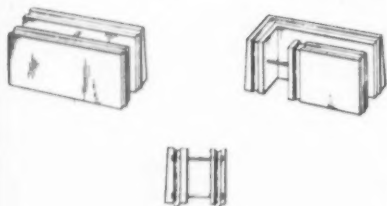
Address .....

City .....



The Block of Tomorrow

## Insul - Bloc



You can make beautiful Insul-Bloc like those in the house above and help materially reduce building costs. This block combines economies of concrete block construction with traditional beauty of clap-board siding.

### Insulation Value .09

Insul-Bloc interiors may be painted directly or be plastered without furring. Its .09 insulation value insures a warm home in winter and cool home in summer.

### This High Vibration Machine Makes INSUL-BLOC



- Two men operate machine.
- Uses wood pallet.
- Foot push-button control.
- High Vibration.
- Produces high quality block with light or heavy weight aggregates.
- Off-bearer and pallet feeder in one operation.

Write for Particulars

DINABURG EQUIPMENT CO., Div. of  
DINABURG BLOCK CO., INC.  
P. O. Box 662 Binghamton, N. Y.

## Scoria Concrete Slabs

(Continued from page 131)

slabs have five reinforcing rods placed longitudinally through each slab along with suitable stirrup connections. Floor slabs have the advantage of light weight when made of scoria as well as strengths well within requirements. (An 8- x 8- x 16-in. scoria block weighs 32 lbs.)

### Concrete Water Tanks of Block

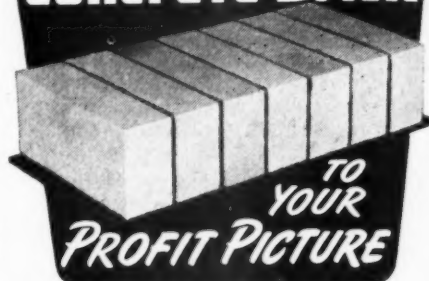
Recently Mr. Otto was asked to suggest a design for a relatively inexpensive water tank. He designed a tank made of concrete block. The problem related to increasing the capacity of a water tank of monolithic concrete construction. Seven courses of 8- x 8- x 16-in. scoria block, made with the standard mix, were laid on top of the monolithic structure. Starting at the bottom joint a  $\frac{3}{4}$ -in. reinforcing rod was placed on top of the joint, followed by another  $\frac{3}{4}$ -in. rod then two  $\frac{1}{2}$ -in. and two  $\frac{3}{4}$ -in. rods for the two top courses. A vertical  $\frac{3}{4}$ -in. reinforcing rod on 2-ft. centers was also used. Then the cores were filled with regular concrete and the tank plastered inside and outside. The block made a neat, cheaply constructed, and very serviceable water tank. The tank was 35 ft. in diameter.

The company is owned by Edgar D. Otto and his son, Richard Otto. Mrs. Betty Homeshier is in charge of the office. Recently Sidney A. Merriam joined the staff as a promotional engineer.



Above: Tractor and bulldozer excavates scoria and pushes it to timbered loading tunnel. Below: Scoria pushed by bulldozer over loading tunnel

## Now Add Concrete Brick



TO YOUR  
PROFIT PICTURE  
with SPEEDY, LOW-COST  
REED EQUIPMENT

Every day finds more and more builders switching to concrete brick—a proven way to lower costs while maintaining structural strength and permanence. Reed equipment puts you into this profitable business with a minimum investment. With one VI-BRIK-CRETE and three men you can easily produce over 8,000 brick per day—selling at \$30.00 to \$35.00 per thousand for plain brick; up to \$10.00 more for colored.

### VI-BRIK-CRETE

28 PER MINUTE

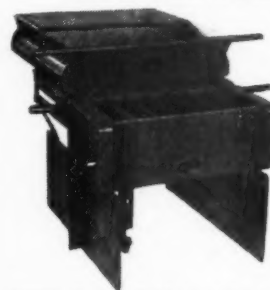
NEW HOPPER SPEEDS MOLDING



Makes brick 7 on edge at 28 per min. 3600 vibrations produce solid, sharp-cornered super-standard brick. Sturdy construction. Thoroughly proved. Send for literature showing various size brick, specifications, production line set-up for lower costs.

\$875  
For Machine  
\$734.50  
For Pallets  
8,000  
Daily  
Production

TEST YOUR MARKET AT LOW  
COST with MODEL 401



MAKES 3,500 BRICK A DAY —yet costs only \$237.50 (or \$500.00 complete with pallets). LIBERAL CONVERSION ON VI-BRIK-CRETE when desired. Write for full facts. MIXERS, CONVEYORS, HOP-

PERS also available—priced low and built for top results. All prices F.O.B. Three Rivers. All orders delivered promptly. Send for detailed literature on items that interest you today.

R. S. Reed Corporation

720 E. HOFFMAN ST., THREE RIVERS, MICH.

## Concrete Products News

**SUPERIOR CEMENT WORKS**, Superior, Wis., owned and operated by Walter Bebo, is now in full operation and expects to go into the manufacture of cinder block shortly. Capacity of the plant is between 800 and 1000 block per day.

**ROLF OMTVEDT** has announced that he plans to erect a concrete block and tile plant in Redwood Falls, Minn.

**C. G. BERWALD AND M. R. OLSON**, partners, plan to erect a concrete block plant in Baker, S. D. The name of the company is Baker Cement Products Co.

**RED RIVER CONCRETE CO.**, Red Lake Falls, Minn., has started the manufacture of concrete block. At full production the capacity of the plant will be 700 block per day.

**ALVIN A. KALKE** is planning to open a concrete block plant in New Richland, Minn. He also operates a similar plant at Osage, Iowa.

**VALLEY READY-MIX CONCRETE CO.**, Sunnyside, Wash., formerly Martin & Sons, has changed ownership. L. R. Drollinger is the new owner.

**B. C. BACKSTROM**, veteran, Cannon Falls, Minn., has announced plans to build a \$50,000 ready-mix concrete plant in Wacouta, Minn.

**OAK HARBOR BUILDERS' SUPPLY**, Oak Harbor, Ohio, has started manufacturing concrete block at the rate of 1000 block per day. Kenneth and Willard Ellithorpe, brothers, are the owners. The firm also handles bulk cement by the bag or carload, cement mortar, reinforcing steel, reinforcing mesh, various types of brick, glazed tile, crushed stone and general builders' supplies.

**MATTHEW SKRINNER**, Jack Rupert and Frank Sechnik, veterans, are planning to build a concrete products plant in Eveleth, Minn.

**LEONARD DUTZEL AND ADAM ZELMER, JR.**, have established a concrete block plant in Bryant, S. D.

**RENOLD ZIMMER AND MARVIN FRANK** have purchased the concrete block plant of Raymond Herpst in Elmwood, Wis. Mr. Herpst has moved to California.

**MEYER & GILMORE BLOCK CO.**, Millheim, Penn., has purchased Appley equipment for the manufacture of concrete block in eight different sizes. Philip Meyer and Harold Gilmore are the owners of the plant which will be erected in the very near future.

**CONCRETE PRODUCTS CO.**, Laurens, Iowa, owned and operated by Henry Rankin and Melvin Hanisch, has started the manufacture of concrete block and tile. Capacity of the plant is 1000 block per day.

**C. B. CHAPMAN**, Mankato, Minn., has purchased the concrete block plant of the Worthley Concrete Products Co., which he has managed for the past year. Mr. Worthley will continue operating a gravel pit and manufacturing plants for concrete joists, man-

(Continued on page 140)

Get the most  
from air entrainment...

use

**\* DAREX  
AEA**

Maximum benefits are a direct function of controlled air. Maximum benefits are possible only when the air entraining agent is proportioned at the mixer.

For average concrete the use of one ounce of DAREX AEA per sack of cement will entrain approximately 3% to 5% of air. For other types of mixes and unusual sand gradation, the quantity of DAREX AEA can be adjusted to obtain the desired air content.

In the manufacture of concrete blocks where larger quantities of AEA are necessary, the quantity of DAREX AEA added can be adjusted to obtain maximum benefits.

### HERE'S WHAT YOU GET WITH DAREX AEA:

#### IN READY MIX CONCRETE

Improved plasticity  
Easier placement  
Reduced segregation  
Less green shrinkage and bleeding  
Quicker finishing  
Permits reduction in fine aggregate

#### IN CONCRETE BLOCK

Increased production by practically eliminating green breakage and culls  
Improved surface texture  
Increased strength  
Reduced moisture absorption

DAREX AEA, the approved air entraining agent, comes ready to use and it is not harmful to handle.

### DEWEY AND ALMY CHEMICAL COMPANY

Chicago, Ill.

Cambridge, Mass.

Oakland, Cal.

\*T. M. Reg. U.S. Pat. Off.

**FAST --**

**IMMEDIATE DELIVERY ON**

**both BLOCK MACHINE and MIXER**

- Block machine, price \$375 F.O.B. Knoxville.
- Capacity 60 blocks per hour.
- Plain pallet press.
- Attachments available for several sized blocks.
- Concrete Mixer (9 Cu. Ft.) \$375 (other sizes to your order)

**C. M. WOOTEN CO.**

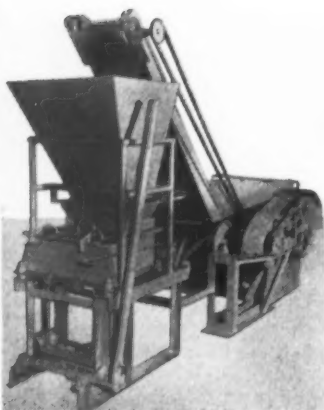
**2716 N. Central**

**Knoxville, Tennessee**





## HERE'S THE PROVEN PLANT FOR SMALL OPERATORS



### A GRAVELEY COMPLETE BLOCK PLANT FOR

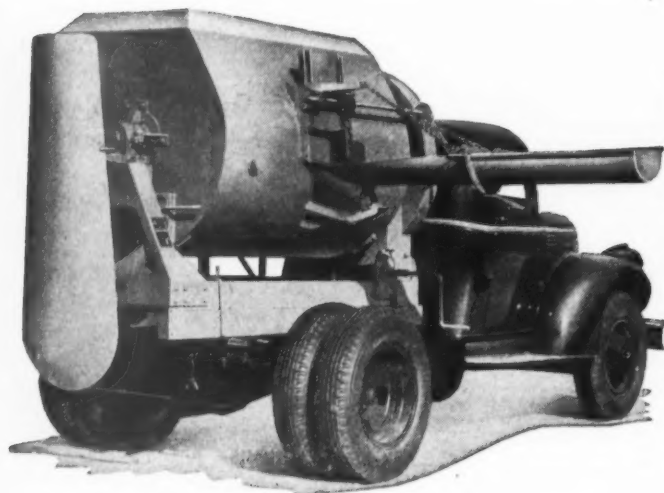
Producing 125 Standard Block  
Per Hour .  
Portable  
Double Vibration in Core  
and Mold Box  
Quick Delivery

Shown above is the popular Graveley "Midget" plant which is giving hundreds of producers handsome profits while producing beautiful, dense, water-repellent block for their communities. Complete plant is powered by a single 3 h.p. motor.

**BOB GRAVELEY INDUSTRIES, INC.,**  
519 Brookhaven Drive,  
Orlando, Florida

Export Offices: 121 Broad Street, 10th Floor, New York 4, N. Y.  
Cable Address: "GEWEHOFF", New York, U. S. A.

## The New **HIGH DISCHARGE** *Transport* **TRUCK MIXER**



- ★ FAST OPEN TOP CHARGING
- ★ FULL VIEW INSPECTION
- ★ SUPERIOR MIXING PRINCIPLE
- ★ INSURES QUALITY CONCRETE
- ★ ALL STEEL CONSTRUCTION
- ★ LOW MAINTENANCE
- ★ ALL BEARINGS FULLY PROTECTED
- ★ GOOD DELIVERY

PHONE, WRITE, OR WIRE FOR DETAILS . . . FLANDERS 7800

**CONCRETE TRANSPORT MIXER COMPANY, INC.**  
4985 FYLER AVE. ST. LOUIS 9, MISSOURI

## Concrete Products News

(Continued from page 139)

hole block and concrete garden furniture. The concrete silo and crib plant was sold in March to five employees, Frank Morrison, Frank Little, Elmer Neelman, Burdette Biehn and Clifford Morris.

ROBERT C. MISHEK of Waseca, Minn., has purchased the concrete tile plant of the Lee Brothers (Oscar, Clarence and Charles) in Waseca, who are planning to manufacture the concrete tile machine which they have designed and which will make 4000 concrete tile a day with three men.

GEORGE BAUER AND HAROLD POQUETTE, Arkansaw, Wis., have started producing concrete block at the rate of 1000 block per day.

KING BRICK Co., Portageville, Mo., is now turning out 10,000 concrete brick per day. Concrete roof tile are also produced.

MINNEOTA CEMENT PRODUCTS, Minneota, Minn., has been purchased by Albert Boogaard from A. B. Tracy, Norman Olafson and William Anderson who started the business a year ago. Mr. Boogaard will retain the same name for the firm.

NORTHEAST BLOCK Co., Petoskey, Mich., owned and operated by George H. Allan and Giles Schmidt, has started producing concrete block.

WILLOWDALE CEMENT PRODUCTS Co., Sidney, Ohio, is planning a new addition to its concrete block and tile plant. Septic tanks are also produced. Raymon Shardo and Elmer Grisez are the owners.

MEDINA SUPPLY Co., Rittman, Ohio, has announced the opening of a new \$30,000 ready-mix concrete plant in Rittman. John and Elbridge Moxley are the owners and Harold Shook is manager of the plant.

LEO AND HUBERT WHITE, Wisconsin Rapids, Wis., have announced the opening of a concrete and masonry business under the name of White Brothers. They will use Wisconsin Valley Concrete Products Co. materials in their home construction work, laying of sidewalks, etc.

RAYMOND CEMENT BLOCK WORKS, Villmar, Minn., has started operating a concrete block plant with a capacity of 1000 block per day. The owner is H. W. Schroeder, who is assisted by his son, Casper.

HEMENWAY CONCRETE PRODUCTS Co., new concrete block and tile plant is nearing completion in Albert Lea, Minn. When completed, capacity of the plant will be 8000 concrete block per day and between 5000 and 6000 concrete tile per day.

BUCKEYE SAND & SUPPLY Co., Bellaire, Ohio, is manufacturing Celocrete block under a franchise from the Celotex Co. which manufactures the aggregate for the block. Harry Grotz is manager of the plant.

CECIL AND THOMAS HEMSTOCK, partners, are operating a concrete block plant in Sparta, Wis., that pro-

duces 600 block per hour. The plant is all mechanically operated.

RALPH SIMS AND PAUL SCHWEEDLER, war veterans, Pattonsburg, Mo., have installed a new Morris portable concrete block machine. Capacity of the machine is 1000 block per day which can be made in any color desired. Sand and gravel is furnished by the Cooley Gravel Co. of Sampsel, Mo. Price of the block is 9¢ for the 4- x 6- x 12-in. and 11¢ for the 4- x 8- x 12-in.

AMHERST BLOCK CO., Amherst, Wis., is producing concrete block at the rate of 500 per day and concrete brick at the rate of 700 per day. The plant is owned and operated by Nels Westergaard and Kelly Nash.

LEVI HARRIS, Oakes, N. D., has a concrete block plant under construction.

EAST KOOTENAY BLOCK CO., Cranbrook, B. C., is producing cinder block, concrete block and sawdust block at the rate of 3000 per day. N. L. Atwood, J. A. Miller and Steve and Victor Pinchak organized and are operating the plant.

BECKWITH & KURZHALS is the name of a new concrete block plant in Grand Marais, Minn. Present capacity of the plant is 200 block per day which will be increased to 500 per day shortly.

SARDINIA CONCRETE BLOCK MANUFACTURING CO., Sardinia, Ohio, which was started last year by Ralph Ogden and Ray Martin, is now in production and turning out approximately 1800 block per day.

KEN-CRETE PRODUCTS CO., Kenosha, Wis., has started the production of concrete block at the rate of 2000 per day and concrete brick at the rate of 10,000 per day. The brick are sold under the trade name "Dun-Brik." The plant is owned and operated by Theodore Christensen, Jr., Arnold Johnson and J. P. Doran.

JULIUS BALLAGH AND WILLIAM MORGAN have formed a partnership to manufacture concrete block at Oskaloosa, Kansas.

CAMPBELL SUPPLY CO., Marquette, Mich., has opened a new concrete block plant with a capacity of 600 block per day on a Besser Super Vibrapac.

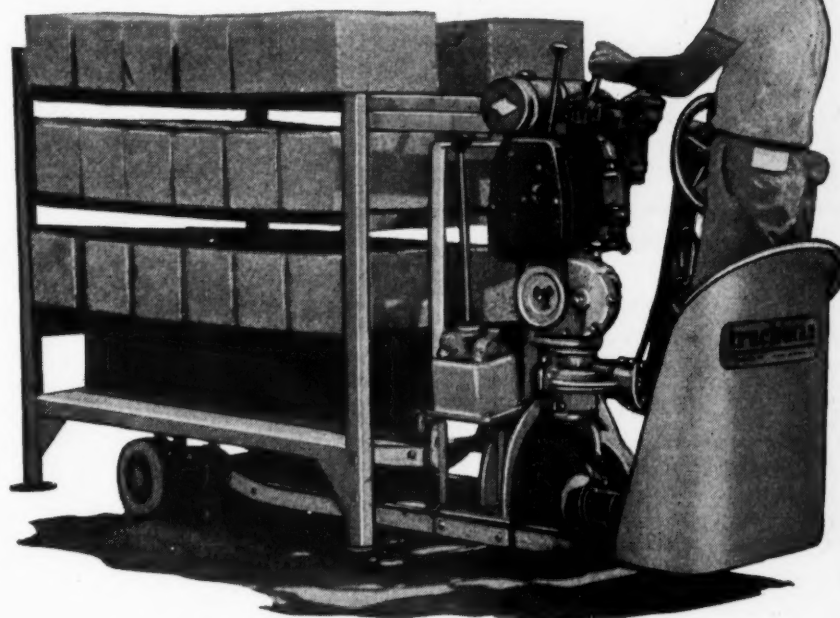
LAWRENCE HOUGHLAND, Pinckneyville, Ill., has started producing concrete block.

CHAMOI BLOCK CO., Chamois, Mo., owned by Howard Steffen and Delmar Wehmeyer, is producing concrete block at the rate of 2000 block per day.

MERIDEN CONCRETE BUILDING UNITS, Rockaway, N. J., has started producing cinder block at the rate of 1500 per day. James Chiarella, Harvey Archer, Jr., and Nelson Doremus are the owners.

STEWART-NATTINGER, INC., Clinton, Mo., has opened a concrete brick plant in Springfield, Mo., and is planning to expand the concrete block plant in Clinton, Mo., with the addition of a transit-mix truck to deliver ready mixed concrete to any job. Mr. Nattinger is in charge of the Clinton

# truck-man does a JOB!



**Ask Any Operator!** Gasoline power and hydraulic lift take the sweat out of handling in this busy industry.

TRUCK-MAN'S other BIG FEATURES will do the same efficient job for you. HERE'S HOW:

- Lifts and hustles skidded capacity loads—quickly, safely, without starting or dropping shocks . . .
- Turns in 360°—snakes into holes its own length—increases your usable space . . .
- Handles without body movement. Grouped controls speed operation, cut fatigue . . .
- Speeds briskly on straightaways—creeps in narrow quarters and close squeezes . . .
- Drives on big DUAL pneumatic-tired wheels for traction and easy riding. Solids carry the load . . .
- Stands the gaff—tireless, day in, day out! TRUCK-MAN is EASY TO BUY, ECONOMICAL to operate . . .

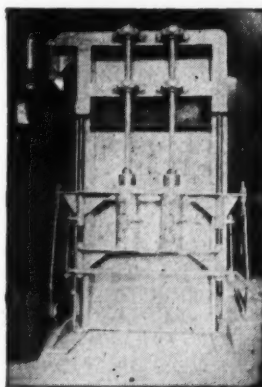
**\$775<sup>00</sup>**  
F. O. B. JACKSON

IF TIME AND MONEY MEAN ANYTHING TO YOU, TRUCK-MAN welcomes your inquiry and investigation. Write now for descriptive bulletin. Limited open territory for substantial distributors.

a product of  
**truck-man INC.**

1413 West Ganson,

Jackson, Mich.

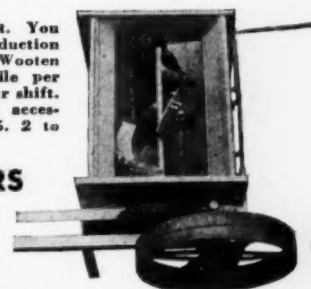


## DRAIN-TILE MACHINE

3000 Tile per 8-Hour Shift. You can get highest possible production for lowest investment with a Wooten Drain Tile Machine. Four tile per minute, up to 2,000 per 8-hour shift. Rugged construction; simple, accessible design. Price only \$685. 2 to 5 week delivery.

## WOOTEN MIXERS

Sturdily Built in Any Size To Meet Your Production Requirements. 9 Cu. Ft. Mixer \$375.



Write For Complete Information

**C. M. WOOTEN CO.**

2717 Central Ave.  
Knoxville, Tennessee





## **"ANCHOR"**

**Complete**

### **EQUIPMENT AND ENGINEERING SERVICE**

Equipment for all phases of manufacturing concrete cinder block and other lightweight aggregate units. Our engineering service for new plants and modernizing old ones will help you operate more economically.

Stearns Clipper Stripper Machines;  
Stearns Joltcrete Machines; Stearns  
Mixers; Cast Iron and Press Steel  
pallets, Straublox Oscillating At-  
tachments, etc.

Repair parts for: Anchor, Stearns,  
Blystone Mixers and many others.

**Anchor Concrete Mch. Co.**

1191 Fairview Ave., Columbus 8, Ohio

plant and Mr. Stewart will take over management of the Springfield plant.

G. VAIL McDONALD and his son, Maurice, have started a concrete block plant in Beloit, Kans. Capacity of the plant is 500 block per day, including end block and half block.

A. E. ANDERSON, formerly of Sebe-  
ka, Minn., has built a new plant in  
Park Rapids, Minn., for the manufac-  
ture of concrete block, well curbing,  
and culvert and sewer pipe. Capacity  
of the plant is 1000 block per day.

GEURIN CONCRETE PRODUCTS CORP.,  
Murray, Ky., has been incorporated  
with a capital stock of \$25,000. Incor-  
porators are Eugene H. Geurin, P. B.  
Gholson and C. J. McDavitt.

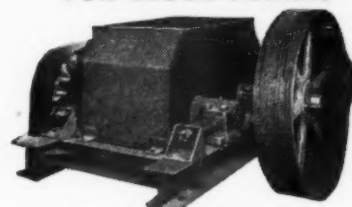
HARRY BRIGGS will open a concrete  
block plant in Pukwana, S. D., as soon  
as necessary equipment is received.

UNITED CEMENT PRODUCTS CO.,  
Wichita, Kans., has received a charter  
to operate a concrete block, brick and  
tile manufacturing business with an  
authorized capitalization of \$200,000.  
John P. Miller is the agent.

\* CHESTER AND MARVIN FELDMAN,  
brothers, are building a new concrete  
block plant in Kinsley, Kans.

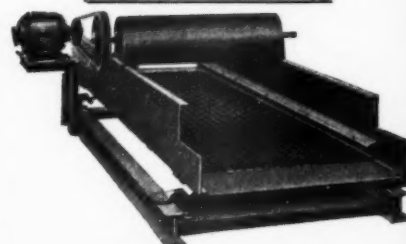
ERNEST M. OSBORN has established  
a concrete block plant in Ulysses,  
Kans., with a capacity of 1200 block  
per day. Half block, end block and  
partition block are also manufactured.  
Face block will be made later.

## **CINDER CRUSHERS FOR BLOCK MAKERS**



10 to 20 ton per hour capacity	25 to 50 ton per hour capacity
<b>\$395</b>	<b>\$895</b>

**7 Day Delivery**



### **VIBRATING SCREENS**

For almost any type of screening oper-  
ation, wet or dry. Makes your product  
more uniform and of higher quality.

**BONDED SCALE CO.**

1101 Bellview Ave.

Columbus 7, Ohio

Manufacturers of Scales, Crushers,  
Conveyors and Vibrating Screens

# **World's Fastest Producer of Concrete Block!**

## **W. & L. Hydraulic Block Machine**

- 900 8-inch blocks per hour, vibrated under hydraulic pressure.
- Adaptable for making all sized blocks.
- Two-week delivery.
- Low initial cost and low maintenance cost.
- Mold box can be changed in 30 minutes.
- Machine, 42 cubic foot mixer, off bearing and 2 mold boxes of any size standard equipment.
- Uses plain pallets.
- Produces 6 4x8x16 in. 3 8x8x16 in. 4 8x6x12 in. or equivalent in any height block per cycle.

*Dealership Available to Those  
Who Qualify*

For further information apply to

**Wm. H. Prince and Sons**

*Exclusive Distributors*

170 West 17 South

Phone 68724

Salt Lake City, Utah